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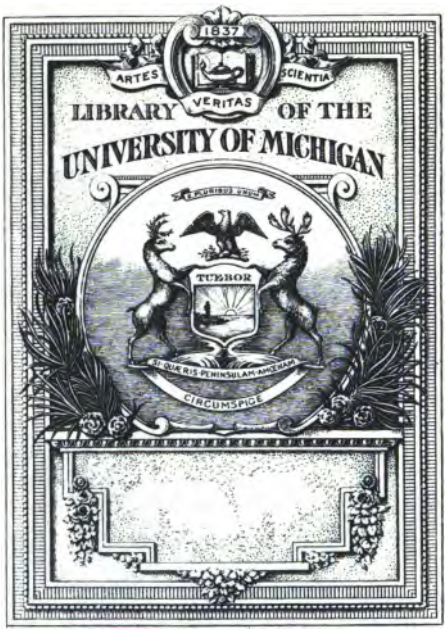
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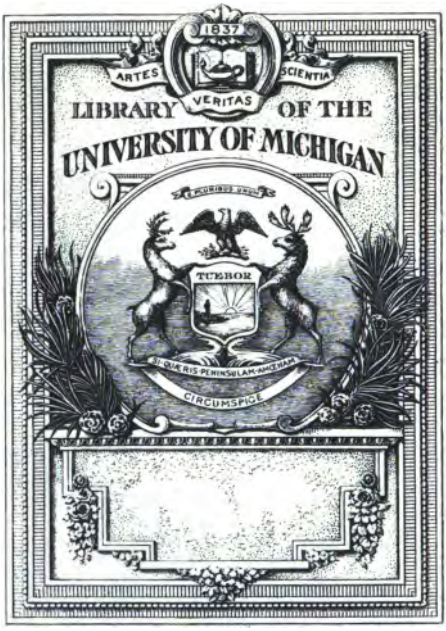
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THE

SOUTHERN FARMER

AND

MARKET GARDENER:

BEING

A COMPILATION OF USEFUL ARTICLES ON THESE SUBJECTS,

FROM

THE MOST APPROVED WRITERS.

DEVELOPING THE PRINCIPLES AND POINTING OUT THE METHOD OF THEIR APPLICATION TO THE FARMING AND GARDENING OF THE SOUTH,

AND

Particularly of the low country.

By FRANCIS S. HOLMES,

OF CHARLESTON, S, C.

CHARLESTON:

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RECOMMENDATIONS.

REPORT OF THE COMMITTEE OF THE HORTICULTURAL SOCIETY OF CHARLESTON, SO. CA.

The Committee to whom was referred the Treatise entitled "The Southern Farmer and Market Gardener," report: That they have given to the Treatise as much attention, as their time and circumstances permitted. Without an entire perusal of the work, they have selected parts, to which their attention was particularly directed. They find that it furnishes instruction in the all important subject of Manuring, Gardening, the rearing and management of Fruit trees and Vines; and is extended also to the consideration of Agriculture, the management of the Dairy, Cattle, Sheep, Poultry, Bees, &c., accompanied with a useful Calendar for the year.

Embracing so many topics of great interest to the Southerner, they were disposed to a favorable view of such a work prepared among ourselves. This favorable disposition has not been diminished by a perusal. As far as each have examined particular articles, they find them possessed of very useful information, and furnishing hints and valuable extracts which would not be generally accessible. It is a compilation from various writers, with practical observations of his own. In their view, the value of the work is enhanced by being so prepared, and think the community should feel indebted to the author for the diligence he has exhibited, in selecting the best things from the best authorities, passing them through the crucible of his own mind. They furnishing a valuable digest on many subjects of great importance to their well being.

The Committee therefore recommend the Treatise to the favorable consideration of the Society.

Henry R. Frost.
Robt. Hume.
Jos. F. O'Hear.
Edwd. Barnwell, Jr.
E. Geddings.

Charleston, October 13th, 1841.

At a meeting of the Society, this day the above report was unanimously accepted, and ordered to be entered on the minutes.

JOS. F. O'HEAR, *Secretary*.

LETTER OF PROF. E. GEDDINGS, OF CHARLESTON.

Charleston, 13th October, 1841.

My Dear Sir—As one of the Committee, to which was referred the manuscript of "The Southern Farmer and Market Gardener," by the

Horticultural Society of South-Carolina, I have examined the same, and it affords me pleasure to state, that, as a judicious compilation, enriched by your personal experience, by means of which many valuable principles have been adapted to the peculiarities of our Southern latitude, it cannot fail to prove useful to your brother Farmers and Gardeners.

The estimate that I have formed of your labors, induces me to recommend that you will give them publicity. In adopting this course, I confidently believe you will be subserving the interests of many who are engaged in the interesting pursuits which occupy much of your attention. Believe me, very respectfully, yours,

E. GEDDINGS.

MR. F. S. HOLMES.

EXTRACTS FROM A LETTER TO DR. HENRY R. FROST, BY AN EMINENT PLANTER OF ST. THOMAS, COOPER RIVER.

"I have passed my eye over as many passages of the 'Southern Farmer and Market Gardener,' as time and circumstances permitted me to do; many of the articles are, I think, valuable, and some of them contain information, in a condensed shape, that it would be difficult to procure elsewhere. The article on Indian Corn is valuable, and, from some experience, I can say, that the directions for saving and selecting the seed, preparing the land, and planting and cultivating it, are correct and judicious.

The article on the Sweet Potato is well put together; it contains excellent directions for cultivating this root, and the Farmer will seldom lose his crop, by their rotting, who adopts the method of preserving them here laid down.

If I had leisure, I could, and would add much more, but I shall be pleased to see those notes published; they will aid the young planter very much, and he who has experience, will be reminded of many things worth recollecting, that had escaped him.

I wish the author much success in his undertaking."

Yours, &c.

* * * * * *

PREFACE.

EUROPE and the Northern States of this Union, possess numerous works on Farming and Gardening, of which many have been widely disseminated throughout the Southern States; their directions, however, are not intended for, nor adapted to such a climate as we possess, so that a work developing the principles, and pointing out the method of their application to the Farming and Gardening of the South, and particularly of our low country, has been for many years a great desideratum.

From my first initiatory step in Farming and Gardening, I have constantly experienced the want of such a work, particularly a monthly Calendar; and my brother Farmers and Gardeners, have frequently expressed their sense of the necessity of such a book, and their desire to see such a one published.

This has induced the present publication; for in compiling the "SOUTHERN FARMER AND MARKET GARDENER," my object at first was simply to collect from the most approved writers, a few articles of the most importance, and by adapting them to our climate, render them useful to me as a reference in my practical labours.

The solicitation of friends, however, induced me to extend my views, to all such matters as I supposed would be practically useful to my neighbours and acquaintances, adding the results of my own limited observations and experience; results which I had always been careful to record in my daily journal of Farm and Garden work.

In giving publicity to my labours, I am actuated alone by the desire of furnishing to the Farmer and Market

Gardener a work of practical utility; my directions are conveyed in practical and simple language, such as may be easily understood, and such alone, indeed, as I have at my command. My vocation is of the plough, not of the pen—I cultivate the fields of nature, not of literature, and my *works* are such as CYRUS pointed out with pride to LYSANDER—"the trees and shrubs which you admire, were all planted by my own hand."

ARTICLES.

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2. Hot beds.
3. Protection and shelter.
4. Destructive, insects, birds, &c.
5. Saving and preserving seeds.
6. Sowing seeds.
7. Soaking seeds.
8. Transplanting.
9. Thinning.
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12. Rolling.
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15. Sowing small grain.
16. Breaking up and listing old fields.
17. Barley and rye.
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21. Sugar beets and mangel wurtzel.
22. Ruta baga, or Swedish turnip.
23. Preserving ruta bagas.
24. Dale's hybrid turnip.
25. Field culture of carrots.
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36. Broom corn.
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55. do do June.
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57. do do Aug.
58. do do Sept.
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60. do do Nov.
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SOUTHERN FARMER

AND

MARKET GARDENER.

Art. I.—MANURES.

1. "To render his farm-stock profitable in meat, milk, and wool, every farmer knows he must provide for them an abundance of wholesome food, as he must be aware that it is this food which makes his meat, milk, and wool, and gives the ultimate profits. And he takes care, if he is a good manager, so to economise his food as to yield him the greatest return in these products. We should think him very improvident, who, instead of feeding out roots and forage to his stock should throw them away, or let them spoil for want of a little care, or permit them to be consumed by his neighbour's stock.

"Let these remarks be applied to our plants. Our farm-crops, like our farm-stock, must be fed, if we would make them profitable to us; and the former like the latter, will be profitable precisely in proportion to the food we give them, and the judicious care with which we give it.

2. "The vegetable lives and thrives upon animal and vegetable matters, after they have become useless to the animal, and are reduced, by decomposition, to a liquid or gaseous state. Every substance that has once belonged to an animal, has previously been a vegetable; and every substance that has been a vegetable, whether it be found in a solid, liquid or æriform state, is convertible into living plants. So it is as important, in good farming, to economise dung, or whatever will make dung, and judiciously to feed it to crops, as it is to husband well the hay and grain of the farm, destined to feed and fatten the cattle.

3. "Both the animal and the plant exhaust the food which nourishes them, and if we would keep the animal fat, or the soil fertile, we must continue to replenish the food.

"The farmer, therefore, who wastes a load of manure, is as reckless and improvident, as he who throws away a bushel of corn."—*Buel's Farmer's Companion.*

4. "Without manure, it is impossible to keep up a supply of good vegetables from any garden or farm; successional croppings must exhaust the best soil, and in time make it the poorest. How necessary then is it, that the farmer or gardener should attend particularly to this important branch of his business.

5. "No farmer can imagine, that has not tried the experiment, what a prodigious quantity of rich, vegetable, and fibrous earth, may be collected from corners and by-places which lie out of the way of cultivation, and which from their retired position, have perhaps never so much as attracted his notice. All such refuse stuff, and fibrous earth and weeds, by being conveyed to his barn yard, at intervals, during the fall and winter, and judiciously combined with its contents, will be converted into a rich, fertilizing, and durable manure, merely by absorbing and retaining that excess of putrescent fluids and effluvia, which is otherwise lost by *filtration* and *evaporation;* that is, by soaking away and drying up."—*Farmer's Cabinet.*

6. "Many take an honest pride in being able to say, I have raised so many bushels of corn, or so many tons of hay; now to be able to say, I have made five hundred loads of manure, is just as much a matter of boasting, for manure will make corn and hay and other valuable products, if it be only judiciously applied."—*Yankee Farmer.*

7. The proper course for a farmer to pursue in order to economise and make the most of his manure, is never to allow it to be in any situation, in which its gaseous or liquid products can escape into the atmosphere, or soak into the earth not designed for cultivation. Should manure be carted and put in heaps about a field where it must remain any length of time exposed before it is used, it should be covered with earth four or five inches deep, which will imbibe and retain all the effluvia (that otherwise would be dissipated and lost) and render it an excellent manure.

Farmers and market gardeners in the vicinity of cities, who daily bring from thence cart-loads of manure, depositing it in one or more large heaps about the farm, there to lie until it is reduced to the state called *short muck*, (in which state it is most generally used by them) not only lose a large quantity of valuable fluid, but likewise gaseous matter, so much so, that

the dung is reduced one half in weight and value. This is certainly slovenly and wasteful, and should not be permitted.

8. The best method I know is as follows. Let the manure which is brought on one day, be carefully covered with a load of good mould, or earth, taken from a field under regular culture, (*but be careful that it is entirely free from nut grass, that bane of all gardeners, in this vicinity*) continue to do this every time manure is added to the heap, putting it into long heaps or beds, and raising it in the centre, like a potatoe-cellar, to allow the rains torun off easily; as soon as one end is of sufficient height, *say from five to ten feet*, let it be covered five or six inches deep with earth, or what is much better, mould, or mud, taken out of old ditches or ponds.

9. In "Letters of Agricola, by JOHN YOUNG, ESQ." he observes, "simple earth although excellent for bottoming and strewing over the pit dug near the barn, is of all materials, the most unprofitable in compost dunghils. A matted sward thickly entangled with roots, or mud dragged from the bottom of bogs or ditches, and replete with aquatic plants, are clearly preferable on this account, that besides bringing earth to the composition, they supply a large proportion of vegetable matter. Whenever the soil must be carted to the heap, it is much better to lay out the expense in transporting these enriching materials; because they will not only equally absorb and retain the evaporating gasses, but greatly augment the quantity of manure."

10. "A strongly dunged field after being ploughed, sown and harrowed, sends forth a healthful and refreshing smell; a proof that all the putrid vapors which otherwise would annoy us, are absorbed and retained for the nutrition of the crop. It is on this account that the poorest earth can be enriched in a very high degree by mere exposure to the gasses of putrifaction."—*Complete Farmer.*

11. The hog, sheep, and cattle pens should be littered at short intervals with leaves, corn stalks, salt-marsh and rushes, straw, &c., and where they are not protected by a shed, should be cleaned out often and the contents thrown into heaps of the foregoing description.

12. *Horses, cattle, dogs, sheep, poultry, &c.* that have died accidentally, should be covered with five or six times their bulk of soil, first covering the carcass with a coat of unleached ashes (quicklime is better) and by mixing a little fresh quicklime with it at the time of its removal, it will destroy all bad

smell arising there-from, and will give you a quantity of excellent manure.

13. *Rye, oats, cow peas* and even *weeds* before they seed, are very enriching if ploughed in, when in a green state. They are excellent manures for sweet potatoes and melons.

14. *Urine* is a very powerful and efficacious manure when used fresh, mixed with solid matter, or diluted with water. It is lessened in value, but its good qualities are not entirely lost by putrescence.

15. *Hogs hair.*—This is an excellent manure, particularly for the Irish potatoe. Put a pinch (that is as much as you can take up between your thumb and fore-finger) on each set, and then cover with earth.

16. *Crushed bones.*—Collect all the old bones that may be found, crush them with an axe or mallet into small pieces, the smaller the better.

17. *Horn* and the *shavings* and *trimmings* of *horses hoofs*, are superior to crushed bones, and very durable in its effects.

18. *Refuse* of *skins* and *leather*, ploughed in the soil, operates for a considerable time.

19. *Burnt straw*, is said to be a manure that will insure a crop of turnips.

20. *Soot* is a very powerful manure and requires no preparation.

21. *Coal and wood ashes* is much used by Northern market gardeners, and English farmers. BRIDGEMAN says, "It is an acknowledged fact, that the poor of Europe are cheaper and better supplied with fuel, than those of this country (*in cities and towns.*) This arises, in a great measure, from the circumstance of ashes being held in high estimation by agriculturists; they are consequently a saleable article in their large towns and cities, at a price in some instances to half the cost of a winter's fuel. A bushel kept dry and clean, is equal to a cart-load that has been exposed to all kinds of weather."

22. *Pigeon's dung* is highly recommended as a fine ingredient in a compost, made with road dirt, for melons and cucumbers.

23. *The dung of domestic fowls* approaches very nearly in quality to pigeon's dung.

24. *Rabbit's dung* has been used with great success as a manure; so much so, that it has been found profitable for market gardeners to keep them for the sake of their dung and

to have the hutches constructed in subservience to the object of accumulating it without waste. Rabbits dung should be used fresh and not be fermented.—See Art. 102: parag. 966.

25. *Night soil* or *human manure.*—In whatsoever state used is a very powerful manure. The disagreeable smell of night soil may be removed by mixing it with quicklime; and if exposed to the atmosphere in thin layers, and strewed over with quicklime—in fine weather, it speedily dries and is easily pulverised. When dried and pulverised, it is called *Poudrette.* In Paris and London it is manufactured in large quantities, (by incorporated companies) put up in barrels, and exported to various parts of Europe and the West Indies. In its effects the first year, no manure can compete with it; in the second year, the benefits from it are much diminished, and the third year nearly disappear.

26. *Street* and *road dirt* and the *sweepings* of *houses.*—The dirt from streets and high-roads are greatly enriched by the droppings of cattle and horses; their constitution varies, but in all cases they refresh and strengthen the soil. These manures are very good for melons.

27. *Black mud* from *ponds* and *old ditches* is an excellent garden manure; and when well mixed with one third *old* stable manure, is the best for strawberries. Swamp muck ploughed in for a crop of crab-grass to make hay, is excellent.

28. *Marsh or salt mud,* when used in a compost, is an excellent manure, and ranks high in the Southern States.

29. *Salt marsh and rushes* are generally used for littering stables and pens for farm stock, but may be put in heaps until well rotted and then used for making composts, in which, they are two of the most valuable ingredients, It may also be ploughed in or listed under separately.

30. *Salt.*—This has been highly recommended as a manure, but very little is yet made use of in the Southern States. The garden may be greatly benefitted by a judicious use of common salt, and our farmers should try some experiments with it.

31. *Corn stalks.*—"That the corn stalk is of some value by itself for manure, there is no doubt, as it is a vegetable substance; but turned in or spread on the soil in its natural state, it would rank low in the scale of vegetable manures. In the farm pens corn stalks hauled in from time to time in the winter season and trampled by cattle, become, saturated with the urine and more fluid dung; and in this way a single light load of corn stalks may be converted into several loads of rich

manure. The pith absorbs fluids like a sponge and in a greater degree than straw or leaves."

32. *Composts* may be made as follows, viz: a layer of marsh mud, then a layer of marsh or rushes, then cow-pen or stable litter, then cotton seeds; cover the whole with swamp, pond or ditch mud, let it lie for eight or ten months, and when ready to use it, cut down in slices from top to bottom, and mix well together.

33. "*Liquid Manures* are highly approved of by many cultivators, and especially by KNIGHT. They are formed by infusing rich dungs, as those of fowls, sheep, pigs, &c. or blood, in three or four times their bulk of water; and the application of the extract so procured, is made at the usual seasons of watering, taking care to apply it only to the roots. KNIGHT applies this mode of manuring chiefly to plants in pots, and is convinced, from experience, that trees and shrubs may grow and bear fruit in very small pots, if abundantly supplied with nourishment in this manner."—*Hort. Trans.*

34. "For some plants, as the vine, cauliflower, cucumbers and others, which gardeners consider as *gross-feeders*, liquid manures may be applied during their full vigour of growth; but the practice, we think, would be dangerous; if so applied to culinary or fruit-bearing plants in general, as producing too great excitement."—*Squibb.*

ART. II.—HOT BEDS.

35. The ambition of all good gardeners is to excel in the production of *early vegetables;* to succeed in this, it is necessary to provide hot beds, protecting frames, &c.

36. *Large frames for market gardeners* "ought to be made of one and a half or two inch plank, of the best yellow pine, nine feet two inches long, four feet ten inches wide, as high again in the back as front i. e. from eighteen inches to thirty-six inches high in the back, and from nine to eighteen inches in front. This way of making them is to give the top a proper slope to the sun, as well as a declivity to carry off the wet when covered with glass lights, which are to be taken off, and put on occasionally; every joint ought to be tongued, the better

to prevent the admission of cold air into, or the escape of warm air out of the bed. The back and front ought to be nailed to corner posts so as to admit the ends to fit neatly; which ends are to be made fast to the posts by iron bolts keyed in the inside, in order that the frames may be taken asunder, when necessary with the greater facility. When the frame is finished, give it two or three coats of good paint before you use it, and with a little care and an annual painting, it will last fifteen or twenty years. These frames will require three lights of three feet each in width, each light containing five rows of glass panes, six inches by four inches, overlapping one another about half an inch. Where the sashes (*when laid on the frame*) meet, a piece of pine about three and a half inches wide, and two inches thick, should run from back to front (well supported at each place by pieces strongly nailed on) for their support, and for them to slide on, in the centre of which as well as in the lower ends of the frame, it will be proper to make a groove five-eights of an inch wide and a quarter of an inch deep, rounded at the bottom to receive and carry off any wet which may work down between the sashes."—*American Gardener.*

37. But should you wish a *smaller frame*, a good strong box of the size required, having the top and bottom knocked out, and the sides made sloping to the front, which should be cut down to half the height of the back, so as to allow the rains to run off easily from the sash; which may be a common window sash that will exactly fit the top of the box and that is well puttied and can keep out the rain. Such a frame will answer as well in the low country of Carolina, as the best tongued and grooved frame, directions for making which, are given in the foregoing paragraph (36.)

38. *To make the hot bed.*—Having placed your frame where the bed is to stand, fronting it to the South or South-east, take a pointed stick and mark the ground all round the inside of the frame, then remove the frame and dig out this space about eighteen inches deep; this done, replace the frame, which will rest immediately on the edge of the pit. Then procure some stable manure, which ought to be fresh from the stable, and place it near (in a heap) where you are making the bed, *shake every fork-full well to pieces*, mixing the long with the short. And now begin to make the bed, taking the long and the short together, mix them well, and in such a way as to suffer no lumps, putting it in the bottom of the pit; let the bed rise in

all parts together, as nearly as possible; that is to say, do not put too much in one part at one time. Beat the whole down with the fork as you proceed. When you have shaken on dung to the thickness of four or five inches, beat all over again well, and so on till the manure is about nine inches from the top of the front of the box; now see that it is quite level and put on the glass. The heat will begin to rise by the next morning, and by noon of the second day it will be ready to receive the earth.

39. *The earth* should be dry; not like dust, but, not too wet, and should be rich and fresh, and the bed should be filled up about six inches deep with it; put on the sash or sashes, and let them remain on twenty-four hours, then take them off and stir the earth well with your hands; for *hands* are the only *tools* hereafter to be used in the hot bed.

40. *The earth is to be level*, not sloping like the glass. The glass is sloping to meet the sun and turn off the wet. The earth which was taken out of the pit should be hauled up round the outside of the frame, so that no water may lie near it; and now your bed is ready for the seed.

41. *Sowing seed in the hot bed.*—Take off the sashes or lights, and make little drills with your finger from the back of the bed to the front; make them equi-distant, parallel and straight: then drop your seeds along the drill regularly; cover all over neatly and smoothly, write the names or numbers and the date of the sowings, on a small piece of stiff paper, put it into the cleft of a little stick, and stick it into the ground; put on the lights, see that they fit well; "and then (says COBBETT) look upon your spring work as happily begun."

42. *Management of the hot bed.*—"The main principle is to give always as much air as the plants will endure; taking advantage of every mild day to remove the sashes and give the plants air, even before the seeds begin to appear. Give air to the bed every day, unless it be very cold indeed.

43. "*The usual way of giving air*, is by bits of thick board cut like a wedge, broad at one end and coming to a point at the other. Each light is lifted up, either at the back or front of the frame, as the wind may be, and the wedge or tilter as it is called, is put in to hold the light up. But if more air be wanted, raise the lights higher, and on a fine day take them off entirely.

44. "*When the plants are up, they will soon tell you about air*, for, if they have not enough they will grow up long-legged

and will have small seed leaves; and indeed if two much deprived of air, will droop and die. Let them grow strong rather than tall, short stems, broad seed leaves, very green, these are the signs of good plants and proper management."—*Cobbett.*

45. "Remember (says COBBETT again) out of a thousand failures in hot bed culture, nine hundred and ninety-nine arise from giving too little air."

46. *Watering the hot bed.*—When it is necessary to water, "take off the lights one at a time, and water with a watering pot that does not pour out heavily; water just at sun-set; and then shut down the lights; the heat will then rise, and your plants grow prodigiously."

47. *Protecting the hot bed.*—Should high winds and very sharp frost, set in; protect your bed with straw or moss, and if a cold North-west wind, make a small screen of corn stalks, (as directed in Art. 3 parag. 49.) Russia matts or old grass bags, or an old carpet, should be kept to cover the sashes with, in case of hail, snow, or very cold weather. Should these not be convenient, use straw, hay or moss.

ART. III.—PROTECTION AND SHELTER.

48. *With regard to protection and shelter,* they are of great consequence; for, it is well known, that, on the south side of a good high fence, you can have peas, lettuces, radishes, and many other things, full ten or twelve days earlier in the spring, than you can have them in the unsheltered ground. And, some vegetables require to be protected from the hot suns, and excessive rains, which injure, or destroy them whilst young and tender.

49. *A fence for the protection of early peas and other vegetables,* is easily and cheaply made. Let posts, which should be three or four inches square, be put along at eight or ten feet apart, go on one side of the row of posts, and nail three rows of strips, laths, or poles, to the posts. The first row at a foot from the ground; the second row should be at equal distance from the first and third rows, and the third row within six inches of the top of the posts.

Then do the same on the other side of the posts. Thus you will have a space of the width of the posts, all the way along between these opposite rows of strips. Then take fine long straight corn stalks, (broom corn, or guinea corn stalks is the best,) and fill up this space with them, full and tight, putting them of course, bottom downwards, and placing these bottoms upon bricks, (a number of old bricks are generally to be found on a farm,) this will prevent their rotting as soon as they would, when placed on the earth. When the whole is nicely filled, strain a line from top of post to top of post, and according to that line, cut off the tops of the stalks even, and while the fence will look very handsome, it will be a shelter much more effectual than pales, or a wall; and in my opinion will last nearly as long as the former, unless the former be made of cedar or locust.

50. Corn stalks, rushes, straw, twigs, pine tops, any thing of this kind, formed into a fence, or put up as a shelter, is preferable to any thing smooth or solid.

Every farmer knows that grass will shoot earlier under a *bush*, than under a wall, or even a house, and the Northern farmers know well the *warmth* that fences made of corn stalks afford.

51. *Frames to protect plants at night from frost*, are made of hoop poles. Put the end of each rod or pole, into the ground on one side of the bed, and bend the other end of the pole, to the other side of the bed, placing that end also into the ground; put these rods or poles at about two feet apart, all along the bed; then tie a few rods lengthwise to these arched rods; so that when you have done, your bed will have an arch over it, formed of these rods. Every evening about sunset, cover this arch with old mats, carpets, or a slight covering of any sort, which take off again at sunrise in the morning.

52. *To shelter young plants from the hot suns*, let a number of myrtle, or other bushes, (having the ends pointed,) be stuck into the ground, in rows between the plants; or you may make a slight scaffold, covered with pine tops, bushes, &c., at a sufficient height, to allow a free circulation of air among the plants.

53. *Oiled paper frames.*—Every market-gardener should provide himself with a number of these frames, for protecting early plants from frost at night, or cold cutting winds, snow, &c., in early spring.

54. *To make oiled paper frames*, take good pine, or wood of any kind, one and a half inches square, the ends mortised into each other, so as to form a square of the size required, say from one and a half feet square, to 2 by 2, 2 by 3, &c., &c.; but a number of the former, is better than a few of the latter sizes. Cut strips of white oak, (or any other kind of wood that will bend easily,) three eighths of an inch square, let these be of such lengths, as when one end is inserted into the frame on one side, and the other end bent over, and inserted into the opposite side, it will form a good arch. Let these arches be made about four inches apart, all along from one end of the frame to the other; tie a thin strip the length of the frame on the inside, to the top of the arch, to keep each bow in its place; let paper be pasted over the top, on the outside, and when dry, give it two good coats of boiled linseed oil, to be put on both sides of the paper with a painter's brush. These frames are sometimes made with a *hoop*, instead of the wooden pieces, and the arches tied at each end.

ART. IV.—DESTRUCTIVE INSECTS, BIRDS AND QUADRUPEDS.

55. *To destroy the black grub, or cut worm.*—Almost every gardener and farmer has some method of his own, to destroy or prevent the ravages of this destructive worm; but as yet not one of all these has been found to answer the purpose effectually.

56. *Ploughing the ground*, (intended for early spring crops) in the fall, and leaving it exposed in a rough state, to the action of the frost during winter, is said to be decidedly the most *certain* way yet known, to destroy the eggs of these worms, and prevent the hatching of a fresh brood in the spring.

57. *Green cabbage-worms, lice, &c.*—A *solution, or decoction* made with the berries of the Pride of India, (to a half bushel of berries, put into a barrel, add 15 gallons of water, and let them soak one or two days,) and sprinkled with a water pot over the plants, will in most cases, prevent the depredations of these insects.

58. *Elder* is said to be excellent used in the same way; and *soap-suds* is highly recommended by English gardeners, both as an antidote against insects, and as an excellent manure. Some persons scatter *pennyroyal* over the beds, for the same purpose.

59. "*Cabbage plants* should have their roots dipped into a compost, made with wet pond mud and sulphur, just before they are planted out; this will prevent the attacks of the grub worm."—*New-England Farmer.*

60. *Weevils.*—"Sheep skins with the fleece on, placed in a granary, will destroy weevils." Wild myrtle scattered through the corn when housing it, is highly recommended.

61. "*Destruction by the fly in turnips*, may be prevented by dividing the seed intended for one day's sowing, into equal parts, and putting one part to steep, in a vessel containing soft pond or ditch water, the night previous to its being used; next morning mix the whole together, and add to each pound of seed, two ounces of flour of sulphur. It has been adopted with success for many years by the intelligent farmers of the south of Scotland."—*Gardener's Gazette.*

62. *Tame ducks* are very useful for *destroying catterpillars, grasshoppers, slugs, snails, &c.* They may be turned loose into the garden or field, as they will not injure the crops.

63. *Worms in peach and other fruit trees.*—Expose the tops of the roots to the distance of a foot, or eighteen inches all around the tree, by removing the earth carefully; and fill up the space with *Pride of India* berries, and cover them loosely with dry earth. The rain, dew, or any other moisture carried to the roots through this "*bed of berries*," will effectually destroy any kind of worms by which the tree is troubled.

64. "*Curculio.*—This is a small bug which perforates the young fruit of the apple, pear, and all stone fruits, and deposits its eggs in them. The eggs soon hatch, and a small maggot is produced which feeds either on the pulp of the fruit, or on the kernel of the seed; for the tastes and habits of the different species are not similar. In the stone fruits, this injury destroys their growth, and they fall, with the little enemy within them. The insect retreats into the earth, and passes the winter in a chrysalis state, and comes forth just as the young fruit is forming, or the petals of the blossoms are falling, to renew its mischievous labour. This insect continues its depredations until autumn."

65. "*To destroy the curculio.*—Hogs are well qualified for the work of extermination. In large orchards care should be taken, that the stock of hogs, is sufficient to eat up *all* the fruit *which falls* from May till September."

66. "Instead of turning swine into orchards, to pick up the fruit which falls, and thus destroy the worms which it contains, it will often be found most expedient to gather such fruit, and give it to swine in pens, &c., either raw, or what would be better, boiled. If such measures were generally taken with fruit which falls spontaneously, so as to prevent the insects which generally cause it to drop prematurely, from escaping into the ground; the worms which destroy one half our fruit and very much deteriorate a considerable part of the other half, would soon be extirpated from our orchards and fruit gardens."—*Complete Farmer.*

67. *Crows and corn.*—To prevent the depredations of crows black birds, red birds, and in fact, of all the feathered tribe; the most certain and effectual method yet known, is to tar your seed, to do this properly follow the annexed directions.

68. *To tar seed corn.*—Take a peck of corn, pour on it boiling water without detriment, stirring it with a stick that each grain may be well soaked. After standing a few minutes, (say four or five,) draw off the water, and immediately pour in a *half pint* of *coal tar*, (which may be got at any ship-chandler's store,) stirring it until each grain is thoroughly daubed with tar, then add lime, ashes, or soot (soot is the best) enough to prevent cohesion. A quart of tar will be sufficient for a bushel of corn, but if you have a quantity of tar, let it not be applied sparingly; you may put double the quantity if you choose; crows may pull up a few plants, but will soon become tired and desist. Since using the tar, I have never had a bird minder, or lost a stand by crows or other birds. Coal tar is an excellent manure also.

69. *Crows and sweet potatoes.*—Tie cord from one task stake to the other, in various directions across the field, and no crow will come near them. The cord should be strong, or high winds will break it.

70. *Use of poison in the destruction of vermin.*—Vermin of all kinds may be destroyed by poison, and the process is remarkably simple. The following directions are from JOHNSON.

71. "*All four footed vermin* may be destroyed by using a bird, chicken, or fowl, cut the breast open on both sides, and rub in

as much arsenic as will lie on the point of a sharp pen knife, and place on a stick about six inches from the ground in the paths where they run.

72. "*Arsenic* should be used sparingly in all cases, as very little of this deadly mineral will destroy life, and if a considerable quantity be taken into the stomach, it will perhaps produce sickness, and may thus be thrown up.

73. "*Rats* may be destroyed by mixing a handful of good meal, a handful of wheat flour, and an ounce of arsenic; make the whole into a dough with water, and then into pills about the size of a pea. Drop these pills into their holes in a seeming careless manner, taking care to place them out of the reach of poultry, dogs, pigs, and indeed, of every living thing but the rats. *The secret* in this case is the deception.—If you put the pills upon a plate near the mouth of their holes, or in any other formal manner, it is ten to one if a rat will touch them; but when the rat finds them, as it were accidentally dropped into his hole or their run, he will eat them greedily.

74. "*Crows and hawks* may be destroyed as follows.—Take a small piece of meat, make an incision in it, and sprinkle, or rub arsenic in the said incision; place it in haunts of the crow or hawk, and it will do the business most effectually.

75. "*Red birds and larks* are very destructive to gardens. Peas steeped in an infusion of coculous indicus, will produce intoxication, when they may be easily taken. Wine lees answer the same purpose.

76. "*Linseed oil* will destroy all kinds of *lice*, which are found upon cattle, or upon any kind of quadrupeds. It will effectually destroy *fleas* on dogs or cats."

The oil must be thoroughly rubbed in the hair of the animal, leaving no part untouched.

ART. V.—SAVING AND PRESERVING SEEDS.

77. "This is a most important branch of the gardener's business. There are rules applicable to particular plants. It is my business here, to speak of such as are applicable to *all* plants.

78. "First, as to the saving of seed, the truest plants should be selected; that is to say, such as are of the most perfect shape and quality.

79. "*In the cabbage* we seek small stem, well formed loaf, or head, few spare, or loose leaves, solid flesh or pulp; in the *radish* high colour, (*if red or scarlet,*) small neck, few and short leaves, and long top. The marks of perfection are well known, and none but perfect plants should be saved for seed. The case is somewhat different as to plants, which are some male, and others female, but these present exceptions, to be noticed under the names of such plants.

80. "*Of plants*, the early coming of which is a circumstance of importance, the very earliest should be chosen for seed; for they will almost always be found to include the highest degree of perfection in other respects. They should have great pains taken with them; the soil and situation should be good, and they should be carefully cultivated during the time that they are carrying on their seed to perfection.

81. "But effectual means must be taken to prevent a *mixing* of the sorts, or to speak in the language of farmers, a *crossing of the breeds.* There can be no cross between the sheep and dog, but there can be between the dog and wolf; and we daily see it between the greyhound and hound; each valuable, when true to his kind; and a cross between the two, fit for nothing but the rope.

82. "There can be no cross between a cabbage and a carrot, but there can be between a cabbage and a turnip; between a cabbage and a cauliflower, nothing is more common; and as to the different sorts of cabbages, they will produce crosses, presenting twenty, and perhaps a thousand degrees from early-york, to the savoy.

83. "Turnips will mix with radishes and ruta-baga; all these with rape; the result will mix with cabbages and cauliflowers; so that, if nothing were done to preserve plants sure to their kind, our gardens would soon present us with little besides mere herbage.

84. "As to the *causes*, I pretend not to dive into them. As to the "*affectionate feelings*," from which the effect arises, I leave that to those who have studied the "*loves of the plants.*" But as to the effect itself, I can speak positively; for I have on the table before me, an ear of Indian corn, having in it grains of three distinct sorts; *white corn*, that is to say, colour of bright rye straw; *yellow corn*, that is to say, colour of

deep coloured *orange; sweet corn*, that is to say, colour of *drab*, and deep wrinkled, while the other two are plump, and smooth as polished ivory. The plant was from a grain of *white corn;* but there were *yellow* and *sweet*, growing in the same field, though neither at less than *three hundred yards* distant from the *white*. The whole, or at least the greater part of the white corn that grew in the patch, was mixed (some ears more, and some less,) in the same way; and each of the three sorts were mixed with the other two, in much about the same proportion as the white corn was.

85. "Here we have the different sorts assembled in the same ear, each grain retaining all its distinctive marks, and all the qualities too, that distinguished it from the other two. Sometimes, however, the mixture takes place in a different way, and the different colours present themselves in *streaks*, in all the grains of the ear, rendering the colour of the grains *variegated*, instead of their being one colour.

86. "It is very well known, that effects like this are never perceived, unless in cases where different sorts of Indian corn *grow at no great distance from each other*. Probably too, to produce this intermixture, the plants of the several sorts must be all of the same *age;* must all be equal in point of time of blowing and kerning. But, be this as it may, the *fact* of intermixture is certain: and we have only to know the fact, to be induced to take effectual measures to provide against it.

87. "I have in the case of my Indian corn, (paragraph 84,) given proof of mixture, when the plants were *three hundred yards* from each other. What then must be the consequence of saving seed from cucumbers, melons, pumpkins, squashes, and gourds, all growing in the same garden at the same time? To save the seed of two sorts of any tribe, in the same garden, *in the same year*, ought not to be attempted; and this it is, that makes it difficult for any *one* man to raise *all sorts* of seeds, good and *true*. However, *some* may be saved by every one who has a garden; and when raised, they ought to be carefully preserved.

88. "*They are best preserved in the pod*, or on the stalks.—Seeds of many sorts will be perfectly good to the age of eight or ten years, if kept in this way, which seeds, if threshed, will be good for little at the end of three years, or less. However, to keep seeds without threshing them out, is seldom convenient, often impracticable, and always exposes them to injury

from rats and mice, and from various other enemies, of which, however, the greatest is *carelessness.*

89. "*The best way, is* to thresh out all seeds, except such as lie in a small compass. They should stand till perfectly ripe if possible. They should be cut, or pulled, or gathered when it is dry; and they should, if possible, be dry as dry can be before they are threshed. If when threshed, any moisture remain about them, they should be placed in the sun, or in a dry room, and when quite dry, should be put into bags, and hung up against a very dry wall, or dry boards, where they will by no accident *get damp.* The best place is some room, where there is occasionally, at least, a fire kept in winter.

90. "Thus preserved, kept from open air and from damp, the seeds of vegetables will keep sound and good, for the number of years stated in the following list, to which attend particularly." European seeds will seldom germinate if kept a summer in this climate.

91. *Table of the durability of the vegetative qualities of seeds.*

	YEARS.		YEARS.		YEARS.
Artichokes,	3	Dandelion,	10	Pennyroyal,	2
Asparagus,	4	Dock,	1	Potatoe,	3
Balm,	2	Egg plant,	3	Pumpkin,	10
Basil,	2	Endive,	4	Purslane,	2
Bean,	1	Fennel,	5	Radish,	4
Bean, (Kidney)	1	Garlic,	3	Rampion,	2
Beet,	10	Guinea Squash,	3	Rape,	4
Borage,	4	Gourd,	10	Rhubarb,	1
Brocoli,	4	Hop,	2	Rosemary,	3
Burnet,	6	Horse-radish,	4	Rue,	3
Cabbage,	4	Hyssop,	6	Ruta-baga,	4
Calabash,	7	Jeru. Artichoke,	3	Salsafy,	2
Cale,	4	Lavender,	2	Samphire,	3
Cale, (Sea)	3	Leek,	2	Savory,	2
Cammomile,	2	Lettuce,	3	Scorzenera,	2
Capsicum,	2	Mangel wurtzel,	10	Shallot,	4
Carraway,	4	Marjoram,	4	Skirret,	4
Carrot,	1	Marigold,	3	Sorrel,	7
Cauliflower,	4	Melon,	10	Spinage,	4
Celery,	10	Mint,	4	Squash,	10
Chervil,	6	Mustard,	4	Tansey,	3
Cives,	3	Nasturtium,	2	Tarragon,	4
Corn,	3	Onion,	2	Thyme,	2
Corn, (Salad)	2	Okra,	2	Tomatoes,	2
Coriander,	3	Parsley,	4	Turnip,	4
Cress,	2	Parsnip,	1	Wormwood,	2
Cucumber,	10	Pea,	2		

"*Some of the seeds* in this list, will keep sometimes a year longer, if very well saved, and very well preserved; and especially, if closely kept from exposures to the open air.—But to lose a crop from unsoundness of seed, is a bad thing, and it is indeed negligence wholly inexcusable, to sow seed of the soundness of which we are not *certain*. Notwithstanding this list, I always sow new seeds in preference to old, if in all *other* respects, I know the new to be equal to the old. And as to the notion, that seeds can be *better* for being old, even more than a year old, I hold it to be monstrously absurd; and this opinion I give, as the result of long experience, most attentive observation, and numerous experiments, made for the express purpose of ascertaining the fact.

92. "I cannot dismiss this part of my subject, without once more cautioning the reader against the danger of *unripe seeds*. In cases where winter overtakes you, before your seed be quite ripe, the best way is to pull up the plants, and hang them by the heels, in a *dry*, *airy* place, till all green departs from the stalks, and until they be quite dry, and wholly rid of juice. Even in hot weather, when the seed would drop out, if the plants were left standing, pull, or cut the plants, and lay them on a cloth in the sun, till the seed be all ready to fall out; for if *forced* from the *pod*, the seed is never so good. Seeds will *grow* if gathered when they are *green* as grass, and afterwards dried in the sun; but they do not produce plants, like those coming from ripe seed. I tried, some years ago, fifty grains of wheat gathered green, against fifty gathered ripe. Not only were the plants of the former feeble, when compared with the latter; not only was the produce of the former, two-thirds less than that of the latter; but, even the quality of the grain was not half so good. Many of the ears had smut, which was not the case with those that came from the ripened seed, though the land and cultivation were in both cases the same."—*Cobbett's Am. Gardener.*

ART. VI.—SOWING SEEDS.

93. "*The first thing relating to sowing*, is the preparation of the ground. It may be more or less *fine*, according to the

sort of seed to be sown. Peas and Beans do not, of course, require the earth so fine as small seeds do. But still, *the finer the better for every thing;* for, it is best, if the seed be actually *pressed* by the earth in every part; and many seeds, if not all, are best situated when the earth is *trodden down* upon them.

94. "Of course the ground should be good, or made good by manure of some sort. But, in all cases, the ground should be *fresh;* that is to say, it should be dug just before the act of sowing, in order that the seeds may have the full benefit of the fermentation, that takes place upon every moving of the earth.

95. "*Never sow when the ground is wet*, nor indeed, if it can be avoided, perform any other act with, or on the ground of a garden. If you dig ground in wet weather, you make a sort of mortar of it: it binds when the sun or wind dries it. The fermentation does not take place: and it becomes unfavourable to vegetation, especially if the ground be in the smallest degree stiff in its nature.

96. "Sow therefore, if possible, in dry weather, but in freshly moved ground.

97. "As to the *act* of *sowing*, the distances and depths differ with the different plants, and these will, of course, be pointed out under the names of those different plants; but, one thing is common to all seeds; and that is, that they should be sown in *rows* or *drills;* for unless they be sown in this way, all is uncertainty. The distribution of the seeds is unequal; the covering is of unequal depth; and when the plants come up in company with the weeds, the difficulty of ridding the ground of the latter, without destroying the former, is very great indeed, and attended with ten times the labour. Plants, in their earliest state, generally require to be thinned: which cannot be done with regularity, unless they stand in rows; and as to every future operation, how easy is the labour in the one case, and how hard in the other!

98. "*It is of great advantage to almost all plants*, to move the ground somewhat deep, while they are growing; but how is this to be done, unless they stand in rows? If they be dispersed promiscuously over the ground, to perform this operation, is next to impossible. The great obstacle to the following of a method, so obviously advantageous is the *trouble.* To draw lines for peas and beans, is not deemed troublesome; but to do this for radishes, onions, carrots, let-

tuces, beds of cabbages, and other small seeds, is regarded as *tedious.*

"When we consider the saving of trouble afterwards, this trouble of drawing drills is really nothing; even if the drills were drawn one at a time, by a line or rule; but this *would* not be the case; for a very cheap and simple tool, does the business with as much quickness, as sowing at random.

99. "*I make my drills in this way.*—I have what I call *a driller*, which is a kind of rake, six feet long in the head.—This head is made of white oak, two by two and a half inches; and has teeth in it, at eight inches asunder; each tooth being about six inches long, and an inch in diameter at the head, and is pointed a little at the end that meets the ground. This gives nine teeth, there being four inches over at each end of the head. In this head is a handle fixed, of about six feet long.

100. "*When my ground is prepared*, raked smooth, and nice, and cleaned from stones and clods, I begin at the left hand end of the bed, and draw across it *nine rows at once.* I then proceed, taking care to keep the left hand tooth of the driller, in the right hand drill that has just been made; so that now I make but *eight new drills*, because (for a guide,) the left hand tooth, goes this time in the drill, which was before made by the right hand tooth. Thus at every draw, I make *eight drills.* And in this way, a pretty long bed is formed into nice straight drills, in a very few minutes. The sowing after this, is done with *truth*, and the depth of the covering must be alike for all the seeds. If it be parsnips, or carrots, or other plants, which require a wider distance between the rows; or cabbage plants, which, as they are to stand only a while, do not require distances so wide: in these cases, other drillers may be made. And what is the expense? There is scarcely an American farmer, who could not make a set of drillers, for six inch, eight inch, and twelve inch distances in a winter's day."—*Am. Gardener.*

In sowing large pieces of ground, or farm crops, see Art. 15: parag. 143.

ART. VII.—SOAKING SEEDS.

101. "*Nearly all kinds of seeds will vegetate sooner*, and more freely, if well soaked in blood warm water before sowing; particularly if the seed be of a hard, dry nature, or the weather at all dry. The frequent complaints that are made of the failure of mangel-wurtzel, and beet seeds, usually arise from a neglect of this precaution. The most extensive and successful cultivators of these roots, always soak the seeds three or four days before sowing."—*Cabinet.*

ART. VIII.—TRANSPLANTING PLANTS.

102. COBBETT says, "That if you transplant table vegetables, or trees, in wet weather, or when the ground is wet, the work cannot be well done; seeds like the earth to touch them in every part, and to lie *close* about them; it is the same with roots. The earth should be made as *fine* as possible; for if it be not, part of the roots will remain in a sort of mortar, and will cling and bind together, and will leave more or less of cracks when it becomes dry.

103. "If possible, therefore, transplant when the ground *is not wet;* but here again, as in the case of sowing, let the ground be dug, or deeply moved, and well broken, *immediately* before you transplant into it. There is a fermentation that takes place immediately after moving, and a dew arises that did not rise before. These greatly exceed in power of causing the plant *to strike*, any thing to be obtained by rain on the plants, at the time of planting, or by planting in wet earth.

104. "*Cabbages and ruta-baga*, (or Swedish turnip,) I have proved in innumerable instances, will if planted in *freshly moved earth*, under a burning sun, be a great deal finer than those planted in wet ground, or during rain.

105. "*There never was a greater, though most popular error*, than *waiting* for a *shower*, in order to set about the work of transplanting.

106. "*If you transplant in hot weather*, the *leaves* of the plants will be scorched; but the hearts will live; and the heat assisting the fermentation, will produce new roots in

twenty four hours, and new leaves in a few days. *Then* it is that you see fine vegetation come on.

107. "*If you plant in wet*, that wet must be followed by *dry;* the earth from being moved in wet, contracts the *mortary* nature; hardens first, and then cracks; and the plants will stand in a stunted state, till the ground be moved about them in dry weather.

108. "If I could have my wish in the planting of a piece of cabbages, ruta-baga, lettuces, or almost any thing, I would find the ground perfectly *dry* at top; I would have it dug deeply, plant immediately, and have no rain for three or four days. This is a matter of primary importance. How many crops are lost by *waiting* for a shower! And when the shower comes, the ground is either *not dug*, or it has been dug for some time, and the benefit of the fermentation is wholly lost.

109. "*However, there are some very tender plants;* plants so soft and *juicy*, as to be absolutely burnt up, and totally destroyed, stems and all, by a hot sun, in a few hours.—Cucumbers and melons for instance, and some other plants.

110. "*In the act of transplanting, the main things are*, to take care not to *bury the heart* of the plant; and to take care that the earth be well pressed about the *point* of the root of the plant. To press the earth very closely about the stem of the plant, is of little use, if you leave the point of the root loose. I beg that this may be borne in mind; for the growth, and even the life of the plant, depend on great care, as to this particular.

111. "*The setting stick*, (Fig. 2, Art 49,) is very requisite in planting out cabbages, ruta-bagas, strawberries, &c. This is made like the upper part of a spade, or shovel handle; the eye of the spade, is the handle of the stick; from the bottom of the eye to the point of the stick, should be about nine inches in length. The stick should not be *tapering;* but nearly equal thickness all the way down, to within an inch and a half of the point, where it must be tapered off at the point. If the wood be cut away all round, to the thickness of a dollar, and iron put round in its stead, or in other words, if the stick be pointed one and a half inches with iron, it makes a very complete tool. The iron becomes bright, and the earth does not adhere to it as it does to wood. But *this* is not necessary, when it is made of *hard wood.*"

ART. IX.—THINNING PLANTS.

112. "*The thinning of seedling crops*, MARSHALL observes, is a very necessary thing to be done in time, before the young plants have drawn one another up too much, by which they become weak, and out of form, and sometimes never do well afterwards. All plants grow stronger, and ripen their juices better, when the air circulates freely around them, and the sun is not prevented from an immediate influence; an attention to which, should be paid from the first appearance of plants breaking the ground.

113. "*In thinning close crops, as onions, carrots, turnips, &c.*, be sure that they are not left too near, for instead of reaping a greater produce, there would assuredly be less.—When they stand too close, they will make tall and large tops, but be prevented swelling in their roots: better to err on the *wide* side, for though there are fewer plants, they will be finer."

ART. X.—PLOUGHING.

114. "*In ploughing*, a slice of earth is to be cut from the left hand side, and to be turned over to the right hand side; if two horses are used in this operation, the left hand, or near side horse walks on the ground not yet ploughed; the right hand, or off side horse walks in the furrow last made, and the workman follows, holding the handles of the plough. By means of these handles, he guides the plough, while he directs the animals of draught by the voice and the reins. When he is to turn the plough at the end of the furrow, or when it encounters an obstacle, such as a stone, he presses down the handle, so that the heel of the plough becomes a fulcrum, and the share is raised out of the ground. As the perfection of good ploughing can only be obtained by *practice*, it must be evident that nothing like a system can be framed for the operation on every diversity of soil.

115. "*The following rules*, (partly those of that eminent agriculturist, the late MR. FINLAYSON, who was himself an expert practical ploughman,) may be laid down as worthy of

being observed by every man who intends to become a proficient in the performance of his work.

116. "*The horses should be harnessed* as near to the ploughs as they can be placed without impeding the freedom of the step—for the closer they are to the point of draught, the less exertion will be required to overcome the resistance.

117. "*When ploughing with a pair abreast*, the most forward and powerful horse, should be worked in the furrow. But if the team be harnessed in line, and there be any difference in the height of the cattle, the tallest should be put foremost, if he be in every other respect equal to the other.

118. "*When at work* they should be kept at as regular and good a pace as the nature of the work will permit; for they are then more manageable, and the draft easier than when slow. By due attention to this, the heavy soil will also cling less to the coulter, and the land will be found to work more freely.

119. *The breadth and depth of the furrow being ascertained*, the plough should be held upright, bearing equally all along on a straight sole, and be made to move forward in a regular line without swerving to either side. The edge of the coulter should also be set directly forward, so that the land side of it may run on a parallel line with the land side of the head, and in such a position that their slant, or sweep, may exactly correspond.

120. "*The ploughman* should walk with his body as nearly as possible upright, without leaning on the stilts or handles, and without using force to any part, further than may be absolutely necessary to keep the implement steadily in a direct line. He should also be sparing of his voice and of correction to the team—of the former, because too much cheering and ordering only confuses the cattle—and of the latter, because punishment, when often repeated, at length ceases to have due effect, and thus leads to unnecessary beating.

121. "It must be apparent that, as every kind of soil has its appropriate qualities, each requires a peculiar mode of tillage. Ploughing which is the chief operation, ought therefore to be executed according to the nature of the land, and not performed upon any one invariable principle.

122. "*On strong clays and loams*, and other soils of a deep or rich staple, the plough should go to a considerable depth; whereas, on thin clays and sands the benefit of deep ploughing is very questionable, especially when incumbent on a sterile sub-soil. On each description of land, distinct modes of opera-

tion and implements of different construction are therefore absolutely necessary.

123. "*Very opposite opinions are entertained* by many eminent farmers regarding the proper *depth of ploughing*. But as yet, the application of deep or shallow tillage, to various soils respectively, has not been ascertained upon any settled principle.

124. "*The proper depth of ploughing* must necessarily depend upon the nature of the soil; but although every intelligent husbandman must be aware of the superiority of those of a deep staple over those which are shallow, still it should be borne in mind that there is a wide difference between the effects of ploughing deeply into land, the vegetable stratum of which is of nearly equal fertility throughout; and that of augmenting a shallow surface of fertile soil by mixing it up with a subsoil of inferior quality.

125. "*Soils of the very best quality may be completely exhausted* in the course of a few years by *shallow ploughing;* so on the other hand, soils of an inferior quality, by a judicious system of ploughing, as has already been remarked, may be greatly improved in the staple. This course is recommended to increase the depth of the soil of uplands."—*American Farmer's Institute.*

ART. XI.—HARROWING.

126. "*One man or boy drives a pair of horses and a pair of harrows*, though sometimes one person drives three horses and three harrows, (in our low country the harrow is seldom met with except on farms where hay *and small grain* is grown, and then the single horse harrow and that a small one, is generally used. It is almost impossible to get the land in prime condition for receiving the seed of small grain, such as oats, barley, rye, &c. without resorting to the use of the harrow.—(See Art. 15, parag. 146.) And when more than one harrow is used, they should be linked together.

127. "*The driver* walks behind with long reins, which enables him to guide and urge forward the horses; and he must be

ready to lift up with his hand, the harrows when they are impeded by roots, weeds or other substances. By lifting up the harrows when in motion, the weeds collected by the teeth fall down.

128. "*By harrowing*, the soil is more thoroughly pulverised; wet weeds, near the surface, are torn out and collected; and the manure is more intimately mixed with the soil. Harrowing is given in different directions. First in length, then cross, and finally in length as at first.

129. "*The operation of harrowing is best performed* when land is moderately dry, and in the mornings while the dew is on. When the land is wet, harrowing is as much as possible to be avoided, as well on account of the less efficacy of the operation, as the injury done the ground, by the treading of the cattle."—*Amr. Far. Institute.*

Art. XII.—ROLLING.

130. *The roller, like the harrow is rarely met with* on the farms or plantations of our low country. It is universally made use of in all Northern and English farms, for passing over grounds newly sown with small grain, or that are to be laid down to grass

131. *Wet ground should not be rolled*, as it will be injured by the cattles hoofs; and will cake. And if the ground is *too dry*, no impression will be made by the roller in levelling the inequalities.

Art. XIII.—MOWING.

132. "With some practice a boy of fifteen or sixteen, with the following directions may be able successfully to compete with the strong but ill instructed.

133. "*Let his scythe and snath* (or scythe handle) be very

light, and the former of razor-like edge, and so hung, that when suspended on the finger by the lower neb, the point and heel of the scythe, may be at equal distances from the ground.

"*Let him stand nearly erect*, the hips being further advanced than the shoulders, and under no circumstances to stoop, and when inserting his scythe into the grass, be sure to keep the heel nigh the ground, and when cutting the clips and after, let the point be equally near it; let the body turn with the scythe as on a pivot, the heel of the scythe passing within two or three inches of the advanced foot. This will relieve the arms and so divide the effort, that he will mow with as little fatigue as he can perform light work, and soon laugh at the "six footer" who stoops to reach his grass.

134. "*Let the boy also at first be instructed* to clip only ten or twelve inches of grass, until his erect posture and horizontal position of his scythe become habitual, when his love of ease, his interest and desire to triumph, will require a long scythe, perfect in temper, yet light"—*Far. Mo. Visitor.*

Art. XIV.—HAY MAKING.

135. "Having observed, that in a season when there was no rain whatever, and the hay had been made with rapidity, and carted within a short time after it had been cut, that a greater quantity was destroyed and injured, by being overheated and burned, than in a catching, irregular season; that, when hay had not been heated in the stack, it is frequently mouldy; that, as hay lost its native green colour and approached a brown, it lost its nutritive qualities; and that, altogether, the making of hay as usually conducted, was a very precarious and teasing operation, I determined on trying to arrange a system on some more regular and certain principles, in which I succeeded; and by adopting a certain and regular course of operation, was enabled to make my hay of a uniform good quality, and let the weather be as it might, at a regular expense of labour. And considering such a process, not only of importance, as it ensures a more perfect quality, but as it affords a more certain protection against the

injuries, usually consequent on the uncertainty of the weather, and overheating in the stack, and that it thus removes two great causes of anxiety, it may be well worth the public attention.

136. "In the first place, *as to the state of the weather*, it generally happens at this season of the year, that there are three or four days dry; therefore, on beginning to cut the grass, as it is well known, that during wet weather, grass may be cut, and suffered to remain in the swarth for several days without injury; and it being desirable, where hands are plenty to have a good quantity, or so much as will complete a stack in a day, in the same state of forwardness, I should prefer beginning to cut during the rainy weather; however, be this as it may, swarths should not be opened but on a certain fine day; and, when this is done, the grass should be well shaken apart, and equally spread over the ground.

137. *As soon as the upper surface is dry*, turn it well over; and in this operation great care should be taken to open and spread any cocks that may not have been divided in the first opening. This being done, commence raking into wind-rows, in time that the whole may be made into small cocks before night.

138. "*The second day these cocks must remain untouched*, let the weather be wet or dry: the third day if the weather be certain and fine, throw the cocks open; but if the weather be wet and threatning, they may remain another day, or until the weather is certain to be fine for the day. The cocks should then be thrown, according to the crop, into beds of two or three rows; and after three or four hours exposure turned over; and taking time to gather the whole into wind-rows and cocks before night, let this operation commence accordingly, *and none be left open;* the day after this, which in fine weather will be the fourth, *the cocks must again remain untouched, or not be opened, whether the weather be wet or dry.*

139. "*On the fifth or next day* these cocks will only require to be opened for an hour or two, when they will be fit for the stack.

140. "*The novelty of this mode* consists only in suffering the hay to remain in the cock the second or third, or alternate days; and at first sight it may appear that so much time in fine weather must be lost, but this is not the case.

141. "*While the hay remains in cocks*, a slight fermentation,

or what is termed *sweating*, will take place, and in consequence, after it has been opened on the third and fifth days, it will prove to be just as forward as if it had been worked every day.

142. "*And the advantages resulting from this* are obviously the following: by shortening the time of open exposure, the colour of the hay is more perfectly preserved and consequently the quality; and the fermentations or sweatings which take place in the cocks, proved so much to have diminished that principle or inclination to prevent its heating injuriously in the stack; and the whole operation of making, whether it takes four days or eight, requires three day's labour only, and the hay being left in that state every night, in which it is the least possibly exposed to the injuries of the weather, and in which it may remain for a day or two, in uncertain weather, without injurious exposure, much painful anxiety and useless attendance of labourers are obviated."—*Far. Instructor.*

Art. XV.—SOWING SMALL GRAIN.

143. "*These three maxims hold universally true in agricultural operations.*

1st, What is worth doing at all, is worth doing well.

2nd. The best ploughing a crop gets, is which it receives before it is planted.—And,

3d, A crop well put in is half made.

144. *As a universal rule*, the first thing to be done, allowing the ground to be fertile enough, is to break it up well, having it soft and pulverised, to a depth proportioned to the depth of the soil. The next thing, is the proper inhumation of the seed.

145. "*With regard to the preparation of the soil*, as it is believed all understand the necessary operations, (See Art. 10, 11 and 12,) I shall say nothing, but confine my remarks to the disposition and inhumation of the seed, and the reasons for such directions as shall be given in regard to these operations.

146. "The ground should be harrowed and levelled, and the surface pulverised to the depth of at least two or three inches, before sowing the seed, which will then lie more evenly, and

regularly distributed, without falling in masses, into open furrows, and indentations in the surface, thus throwing too many seeds in one spot, while other places have none at all, or not their proper proportion.

147. "*The seed sown should be covered* with the harrow alone, and the levelling process previously executed, will prevent the harrow from throwing the seeds from a ridge, on which they might lodge, into the adjoining hollow, when they will be too thick to be productive of abundant heads.

148. "If from the great inequality of the surface, an equal distribution of the seed is supposed not to have been effected, the harrowing should be repeated in the opposite direction; indeed, this cross harrowing it would be well to repeat in all cases, so that if the harrow teeth are not too far apart, the seed will be placed in relation to each other, at such distances, as by a proper distribution, will ensure a full occupation of all the land, without those inequalities, which are otherwise, almost inevitable, and which, by crowding particular spots, allow the farmer but a moderate return of straw without grain.

149. "These remarks, it is hoped, are so far intelligible.—They are designed to show, that it is important to procure an equal distribution of seed over the land, which cannot be done, if sown on an unlevelled surface, and without double harrowing, to separate the seeds which have fallen, too many in one place, and into the furrows made by the teeth of the harrow, in the first operation of covering. This second operation, if the harrow has teeth not too far from each other, cuts the field in small squares, each of which has its portion of seed, without any part having thrown on it more than it is able to nourish.

150. "*The next direction in the process*, and on which, the principal improvement depends, is to *cover the seed shallow*, which cannot be done with the plough. The plough besides, throws the seeds into furrows, and although most of the seed fall only half the depth of the furrow, yet many reach the bottom, and are thus covered so deep, that they either never come up, or reach the surface at so late a period, that its pasturage is already occupied by more thrifty competitors.—Thus there is a waste of seed, and the production of weaker plants, which either pine till they die, or lead a sickly existence, entirely without fruit, or with an imperfect product.

151. "What more could be rationally expected, from the too common way of putting in the oat crop? The owner

scatters in the fall or spring, his seed over the unploughed surface of some fallow field, beat hard by the year's rain, and the feet of his cattle, and finishes the slovenly process, by once ploughing it, leaving it uneaven and cloddy, and the seed covered by long slices of the tough surface, through which it will be very difficult to penetrate.

152. "*The direction to cover shallow is indefinite:* It should be more explicit, and for this purpose an inch may be indicated as about the proper depth.

If you examine the roots of any the grains mentioned, you will find that those plants are the most thrifty, whose germination took place near the surface of the soil, while the weakly looking plants have sprung from a depth of three or four inches. The latter continue weakly, branching little or none, while the former throw out additional shoots from the root, and multiply the production more than an hundred fold.

153. "*The deeply covered seeds*, are eight or ten days later in appearing, and their further growth is delayed, not simply by the existence of stronger rivals for the pasturage, but they stop when they approximate the surface, to take that start which nature intended them at first.

154. "Within an inch of the surface, they shoot forth new roots, and all below, down to the seed, shrivels and dries, so that the future plant depends alone for nourishment, on those sets of organs which it has developed in proximity with the surface, where it can receive the direct influence of these essential agents, *moisture*, *air*, *heat*, and *light*.

155. "The oxygen gas of the atmosphere, is moreover essential to the fermentation; for, seed planted so deep as to be beyond its reach, will lie dormant for years, if kept dry, but still capable of continuing the species on the accession of heat, moisture, and air. This seclusion of air, is the reason why seeds come up so badly, if after sowing, the surface of the earth becomes muddy after a rain, and hardened into a close dust.

156. "*Time of sowing.*—We think all small grain should be sown, the first or second week in October. Local situations will of course, modify all general rules. For instance, in situations subject to a superabundance of moisture, the plants would be liable to be frozen—a result the more probable, from the spewing up of the earth by the frost, and thus, more exposing their roots to the severity of the winter.

157. "But when the crop thus early sown, escapes injury,

its product is much more heavy and perfect; and it furnishes the farmer an earlier supply by a month, at a season when his stores have diminished to a scanty supply."*

158. *Sowing small grain in drills or trenches*, is said by many farmers, to be decidedly the best method, for obtaining a *large* and *heavy grain*, and *ensuring* a *fair crop*. The reason assigned for this is, that in case of drought, the crop admits of hoeing and weeding. "Deep hoeing causing a fermentation in the earth, and attracts dews and moisture, thereby nourishing the plant, and perhaps too, at its most critical stage of growth—when it is shooting out its seed-stalk," and making a crop, which had it been sown broadcast, would have greatly suffered, and perhaps been lost.

159. *But the great saving in time and labour*, in sowing broadcast, will perhaps in the end, (particularly if the land has been well prepared, and the inhumation of the seed be performed as directed in paragraphs 146 to 157) more than counterbalance the difference in the yield, when sown in drills.

160. *Trenching or drilling.*—The old plan of trenching with the hoe, consumes much time, and is very laborious.—An excellent driller, (Fig. 1, Art. 49, parag. 272,) which, "any farmer, who has a moderate degree of mechanical skill, and the carpenter's tools, which every farmer ought to keep," may construct, will be found of great utility, and will soon repay the trouble and expense.

161. The teeth can be bought at the seed stores, be made by a blacksmith, or be taken from an old cultivator if you have one. Insert them in a piece of oak or hickory, at the distance you wish the drills to be made apart. It would be better to attach it to a roller, which can be soon made of a good oak log, and which will break all lumps left by the harrow. It may also be attached to the shafts, axle, and wheels of a small cart, which will answer the purpose of keeping the horse, or ox in a straight line.

162. One horse or ox will, with this instrument, make you six, eight, or ten drills at one time, at equal distances from each other. Before you start, put down stakes at intervals in a line, to direct your horse, and when you return, let the wheel, (if it is attached to wheels,) or the tooth, next the side done, run in the last drill just made. "Thus your drills or

* Extract from a communication to the Agricultural Society of Richmond county, by Dr. J. G. McWhorter.

trenches, will be straight, and the beauty of the field and crop not marred by the crookedness of the lines."—*Cobbett.*

163. If the teeth of the driller *be made moveable*, this instrument will be found very useful for many purposes. It is better than the bull tongue plough in laying off fields; for with the former, you may draw several lines at once, and those straight all through the field; (provided, the first side, or course be done well and straight, which it is difficult, if not impossible, to do with the plough. By removing the teeth, you may increase or lessen the distance between the drills.

ART. XVI.—BREAKING UP, OR LISTING OLD FIELDS.

164. *If you intend to plant old fields the next* season, you should not neglect ploughing, or listing them in, as early as possible in the fall, that the soil may be as well exposed to the meliorating effects of the winter's frost, as possible; and that the stubble which is turned under, have sufficient time to decompose, before the roots of the crops come in contact with it.

165. *Old broom grass fields*, if not turned under, or broken up early in the fall or winter, should by no means be planted with a spring crop, particularly, corn and cotton, for it is a well established fact among our planters, that such lands will not produce healthy plants, until the roots of the broom grass have been completely decomposed.

166. Such lands should in the first place, be cleared of all bushes and trees, and if contiguous to a salt creek or river, give it a good dressing of mud.

167. (Late in summer, let the mud be thrown up in heaps on the borders of the creek or river, and as soon as the watery particles have evaporated, and the mud becomes nearly dry, it may be used to advantage, and thereby save the labour of carting the additional great weight of the water, which when just dug it contains.) Let the mud be scattered evenly over the surface, say from six to ten cart loads to the task, or one quarter of an acre, and immediately turn under the whole

field, with a double horse plough that has a coulter; if it is very tough to plough, and you can conveniently do so, you may put in three horses, two abreast and one ahead; but in most cases, two will be found amply sufficient.

168. In this state let it remain all the winter, exposed to the influence of the frost, and early in the spring, it may be listed and bedded up for corn, cotton, or any other crop; and will then pay handsomely for the additional trouble and expense of mud and labour laid on it.

ART. XVII.—BARLEY AND RYE.

169. *One species only of barley*, is cultivated generally in these Southern States; (North and South-Carolina, and Georgia,) this is the *bearded* or *rice barley*. In its green state, it is the most valuable green food for horses and cattle. Horses may have as much as they will eat; when fed on it, they are seldom affected with cholic, or any such complaints.

170. "*Barley likes* a rich, mellow, and moderately moist (but not approaching to wet) soil; soak the seed 24 hours in soft pond or ditch water; skim off the light grains that float, and mix ashes with it, that it may spread more readily.

171. "*It is not a high growing grain*, but grows thick and stools rapidly. *It should be sown in September and October;* but near Charleston is generally sown in *February*, at the same time that oats is. You may sow in drills or broadcast, one half to two bushels of seed per acre." (For sowing small grain, read Art. 15, parag. 143.)

172. *Time and method of harvesting.* (From the "*Complete Farmer.*") "When the soil is rich, and the season propitious, barley is liable to lodge. If this happens after it has blossomed, no material injury is sustained in the product; if before, the crop is greatly diminished. This shows the danger to be apprehended from making the soil too rich, and of applying fresh manure.

173. "*Barley is known to be ripe*, by the disappearance of the reddish cast on the ear, or what English farmer's term *red roan;* by the ears beginning to droop, and bending themselves round against the stems; and by the stalks becoming

brittle, and of a yellowish colour. This is the particular period for cutting, as, if suffered to stand longer, the heads break off, and the grains waste with the slightest touch.

174. "*It may be cut* with the cradle, sickle, or scythe, according to circumstances. If it stands straight, and is not too heavy, the cradle is to be preferred; if heavy or lodged, the sickle, or scythe.

175. "But as the grain is yet soft, and the straw contains much moisture when it ought to be cut, it should be suffered to become well dried in the swarth, before it is bound in sheaves, or carried to the barn or stack. If cut with the cradle, it is bound in sheaves; but the more common practice is to cut the crop with a scythe, rake the ground and load it with the barley fork."

176. SOWING RYE.—*October and November are the principal months*, for sowing rye in our low country. If you sow for a green crop, sow one and a half to two bushels of seed per acre, but if for a seed crop, a smaller quantity will suffice.—Rye sown in autumn, will be of great advantage to cattle and sheep in the spring. Ewe's and lamb's will derive great benefit from it, at the time when little or no food can be procured.

177. *All poultry will thrive, and lay well*, when they can have a run in a patch of rye.

178. *It may be cultivated on most kinds of land*, but the light sandy soils are generally the best. Sow in drills or broadcast. (For sowing small grain, see Art. 15.) If ploughed into the soil in its green state, it is an excellent manure, particularly for sweet potatoes and melons.

ART. XVIII.—OATS.

179. *Less regard may be had to soil* in sowing this grain, than any other; only be sure that it is not *too wet*. Old grass lands of some years' standing, if well ploughed and prepared will produce a fine crop of oats.

180. *The land intended for this crop*, should be ploughed up early in the winter; in which state it is left until the time for planting in the spring, (February is the month in which

most farmers near Charleston, plant this crop,) when it should be cross-ploughed, harrowed, and cross-harrowed. But if it is to be manured, let the manure be spread on before you cross-plough it. (For sowing small grain, see Art. 15.)

181. *Early sown oats and barley*, are always heavier, and of better quality, than when sown late. This plant is less liable to injury from insects and disease, than any other grain.

182. *Smut* which is the disease it is most liable to, may be prevented by sowing seed of good quality, and when the ground is dry and in good tilth.

183. *Bad seed oats are easily detected.*—In the "Farmer's Magazine," the REV. MR. FERGUHARSON observes, "that every oat kernel, when stripped of the husk, will be found to exhibit the appearance of a *groove* on one side. If the bottom of the groove has a clear translucent appearance, from end to end; if it is not much shrunk into the substance of the kernel, and if the kernel splits with difficulty in its direction; then we may pronounce the vital part of the seed, to be safe from the action of frost.

184. If on the contrary, there is a black speck seen in the groove, at the root end of the kernel; if the groove cuts deep into the kernel, so that it may be split in that direction; and if when so split, the blackness, accompanied with a scaly rotten appearance, is seen extending from end to end, at the bottom of the groove, then the vital part, or future plant, may be pronounced as being entirely unfit for seed."

185. *Oats should be harvested* before the straw has wholly turned yellow. If it is allowed to stand, until it becomes white and destitute of sap, the straw will be of little value. They should be well dried on the ground, and gathered in the mornings and evenings, when the straw is made limber, and pliable from the moisture of the air. There will be no danger, if carried to the barn while they are a little damp, if they have been previously, thoroughly dried. This grain is eminently adapted to feed horses, and the straw for provender, is superior to rye or barley. By using the cradle in harvesting oats, you will save much time and labour, an expert hand after a little experience, cradles three acres a day, five acres is not uncommon at the north for each hand to cradle.

ART. XIX.—MILLET.

186. This plant, (the stalk and leaves of which very much resemble Indian corn) may be sowed at any time between the 25th of March and the 25th of June, but for a fodder crop, you may sow until the 1st of August.

187. *It should be cultivated in drills* three feet apart and six inches in the drills or rows, but owing to the difficulty in saving the crop, on account of the seeds on the upper parts of the stalk, generally ripening and falling before those below have filled, it is best to sow it broadcast and cut it when the upper parts of most of the heads contain seeds which are hard; in this state it affords fodder as nutritious as any other, and more easily made.

188. *Millet sowed on good ground will give* three or four tons of fodder and from fifteen to twenty-five bushels of seed, per acre. When sown broadcast one half to two bushels of seed will be required; but if drilled one half or three-fourths of a bushel will suffice to sow an acre of ground. Cattle are very fond of it and it is excellent for milch cows. In curing, let it dry in the sun three or four days.

ART. XX.—GUINEA GRASS.

189. *This highly valuable grass is cultivated* as green food for horses and cattle. No grass that is grown at the South can compete with it in quality, yield, or rapidity of growth.—Horses and cows are particularly fond of it, and the latter will give an increased quantity of rich milk when freely supplied with it.

190. *The seed is sown early in the spring* on a small bed, the soil of which should be made very fine. Sow broadcast, and rake it in lightly; as soon as the plants can be easily handled, let them be transplanted in rows two feet apart and eighteen inches in the rows. It grows *very fast*, and should be cut as often as it attains the height of two feet, or even less, if desired. I have cut it as often as eight and ten times, and am told by respectable farmers that it may be cut fourteen times, or oftener.

191. A small piece of ground or a vacant lot in a town, which will contain two hundred plants, will supply a horse or cow with green food during the summer months.

192. *The difficulty of preserving the seed* and keeping up a regular supply of spring plants every year, is very great, as generally not more than one-eighth of the seed sown ever germinate.

193. *The method pursued by the late* THOMAS HANSCOME, (a successful cultivator of this grass) to secure an annual supply of spring plants, was as follows.

194. Every year when putting out your plants, save six good, strong and healthy plants; these plant in two rows of three each, at equal distance from each other, (say two feet) in the middle of the bed, which should be six feet wide by eight feet long; this bed before planting should be well turned up with the spade, and if required, a little manure, well rotted, turned in; the soil made very fine and the sides of the bed made smooth and even as the top.

195. These plants will soon grow very high, and when they begin to throw out seed stalks, let the leaves and stalks of each plant be gathered together and a stout string or piece of matting tied round each plant, to prevent their falling down on the beds and being blown about by the high winds. Keep the bed clear of grass and weeds, and as the plants increase in growth, let the earth be well hauled up to the stems of the plants.

196. *The seeds ripen very irregularly*, and if you wish to save seed, take a sheet of paper and hold under the ripe heads, shake gently and the seeds (which are very small) may be secured, and should be immediately put up in stout paper bags, closely tied up so as to exclude all air.

197. *But the best plan* is, as soon as all the plants have ripened and dropped their seeds, and the stalks and leaves have become yellow, to cut them off within a foot of the ground, lay the stalks carefully one side, dig up the roots and throw them away, (*of course don't forget your manure heap*) then rake lightly the top of the bed, but do not go too deep, (for the seed will be buried just as deep as the teeth of the rake go) pick off any weeds or loose trash, and then rake the bed smooth and level; now lay all the stalks which you have just cut off, regularly and evenly across the bed, so as to cover every part of it effectually, and thus protect the seed in case of severe frosty weather during the winter months. Lay three or four

slips of laths (the length of the beds,) on the top of the stalks to keep the wind from blowing them off. In this state let it remain all winter, until the opening of spring weather, when the covering of stalks must be removed and the top of the bed slightly stirred with the rake, and in a short time, if the weather is favourable, the bed will be well covered with innumerable plants, which transplant as already directed (paragraph 190.)

198. *It is as well to collect a little seed* every year and put up as directed in paragraph 196, in case of accidents by which you may lose all in your seed bed, for you would find it difficult, perhaps, to obtain seeds, they, being not generally kept at our seed stores.

ART. XXI.—SUGAR BEETS AND MANGEL WURTZEL.

199. *The soil for these roots* should be rich and friable, easily pulverised, and without lumps or clods. Let it be well ploughed and harrowed several times that it may be in good tilth, lay it off in ridges two and a half feet apart; (this may be done with the plough throwing two furrows together;) put two seeds a foot apart on the ridges, pressing them into the earth with the thumb and forefinger an inch deep, covering them carefully at the same time; or you may make use of the hand dibble (Fig. 8, Art. 49,) which will be found to facilitate the business exceedingly.

As soon as the leaves of the plants are as large as a five cent piece, thin out and leave two of the strongest plants in each hole; let them be hoed well and the grass and weeds be carefully taken up from between the plants. In a week or ten days hoe again and run the plough between the ridges to destroy the weeds, and then thin out to single plants.

200. *Take care and keep clean whilst young*, for four or five days delay will make a difference of eight or ten days in the labour of cleaning an acre. When advanced in growth, you may at intervals of fifteen or eighteen days strip the leaves for feeding your cow, but be careful to leave about six of the young leaves on the top of the plant.

201. *These roots are little affected by changes in the weather;* oxen, cows, sheep and hogs, eat them greedily and fatten upon them; and the roots when chopped fine and mixed with a little grain are readily consumed by domestic poultry.

A peck slit up is a feed for a cow, and should be given night and morning with the usual supply of fodder; milch cows when fed on these roots, should have their feed varied every third day. Wash the root before you cut up, and cut to the size of a nut; a bushel weighs about sixty-five pounds.

202. Soak the seed forty-eight hours before planting. Dont forget this.

ART. XXII.—RUTA BAGA, OR SWEDISH TURNIP.

203. This root, now so universally cultivated, can be raised in as great perfection in the two Carolinas and Georgia as in any part of the globe. The following, on the cultivation of this invaluable turnip, is taken from the "*Southern Cabinet.*"

204. "*The ground should be put in good order* by the plough and harrow, and furrows run from two to three feet apart—some have recommended greater distances, and MR. COBBETT has even allowed four feet between the rows, but this distance does not appear to us to be necessary, and those recommended above will be found sufficient. Into these furrows the manure should be spread very thick, and the earth formed into ridges over it, on which the seeds should be sown.

205. "We have cultivated them on level surfaces and at less distances, but have never found them as luxuriant or succeed as well. Soon after the ground has been prepared, the seeds should be sown. If it is intended to use the plants, which are thinned out, to fill up other compartments, they may be drilled along the whole length of the ridges, but if they be not wanted for this purpose, it will be a great saving of seed to sow only a few every seven or nine inches, to be afterwards thinned out.

206. "Soon after they make their appearance it will be necessary to go over the ground, hoe the tops of the ridges, and loosen the earth around them. A short time after let the plough be used, running as near to the plants on each side as

possible, throwing the earth from them, this will leave small beds or ridges of six or eight inches diameter. The hoe may now be used again, to destroy all weeds which have sprung up, and also to stir the soil around the plants. The earth should then be returned by the plough, which will generally have the effect of destroying all weeds and grass which may have grown on the sides of the ridges.

207. "*As soon as the plants are large enough to handle*, they must be thinned out, unless wanted for the purpose of filling up vacancies or setting out in other places; in this case they may be left until they are from four to five inches high. It must be borne in mind, however, that the sooner they are thinned out the better, for all plants are injured by being crowded with their own species as well as by weeds.

208. "It is not a usual practice among us to transplant the ruta baga for a crop, yet it has many considerations to recommend it to a favourable notice and adoption. In the first place, there is a great saving of seed; (as almost every plant may be used;) in the second place there is a greater certainty as to the time when a crop can be got; and thirdly, there is less labour in the attendance. These we know to be facts, and will, we think, be made apparent to all in the course of the observations we shall have occasion to make on this part of our subject.

209. *The usual and perhaps the best time for sowing* this crop, is from the last week in July to the beginning of September, during this we have frequent showers, but these are seldom of long duration, and the succeeding days are generally clear, accompanied with great heat and a burning sun; hence it often happens that the seeds have to be sown several times before a regular crop can be obtained, the germinating qualities of the seeds being either destroyed, or the young plants killed soon after they are up. There is then at this period a great loss of both time, labour and seed.

210. "It is true that sometimes there occurs a spell of rainy cool weather, and if sown at this time there is every chance of succeeding. This occurs but seldom, and we are as seldom prepared for it when it does.

211. "But should we pursue the plan of either sowing on a seed bed, and treating them like cabbage plants, or preparing only a small piece of the ground intended for the crop, and on this sowing the seeds tolerably thick, we can at a very short notice, prepare the ground and put in the seed, and should

there follow a succession of any hot days, we can from the small place occupied, protect the plants, and if necessity be, even supply them with water, which however will rarely be necessary.

212. "Again, it sometimes happens that the season is unpropitious for the sowing of this crop. The prevalence of a drought at this time may wholly prevent it, or occasion it to be delayed so long that only a meagre crop can be expected. In this case the seed-bed can be resorted to, and at the time others are only sowing their seed, and with but little prospect of success, we can be transplanting out our crop in good season, and in time to arrive at full maturity, and of course yield a large product.

213. "To many, this plan may appear tedious, and requiring more labour than the sowing of the seed at once, on those spots where they are to remain, but this we are convinced is not so.

214. "Whenever the ground is to be occupied, whether it be with seed or plants, the preparation must be the same; the labour therefore in this respect is equal.

215. "If the seed is sown at once where the plants are to remain, the whole surface must be worked over about every ten or fifteen days, until the plants shade the ground. In the seed bed they will not require this attendance, and even if they did, the ground to be gone over is insignificant compared with the other.

216. "They will seldom be fit to be transplanted out under six weeks, so that two workings at least will be saved, and the labour of transplanting an acre is less than hoeing it, in the manner required for turnips.

217. "Many may suppose that the product from an acre of transplanted ruta baga is not equal to that from an acre on which the seeds have been sown—the manuring and after culture being the same. But our own experience, and the experience of many of our friends with whom we have conversed, do not warrant us in coming to this conclusion; on the contrary, we have always found them equal, as far as we could judge from merely inspecting them; and this is also the opinion of others.

218. "In pursuing this course, the ground must be prepared in the same manner as recommended for sowing the seed, and no more should be prepared than can be finished in one or two days. It is best that all should be planted out the same day that it is prepared, as the plants will take much more readily on

newly prepared ground." See Art. 7, on transplanting; paragraph 110 and 111.

219. A hand can plant out a half acre a day with the setting stick. Fig. 4. Art. 49.

220. "If the seeds are sown in August, the plants will be ready to be transplanted in September and October. It is seldom that we are troubled with much grass after those periods, and the plants themselves will soon overshadow the ground.

221. "Although there should not be weeds enough to make it necessary to work among the plants, yet the stirring of the soil ought not to be neglected; every operation of the kind is of immense value to the plants, as it not only prepares more food for them, but also loosens the earth, and enables them to push their roots in every direction in search of it, which without this would be out of their reach, and from which they would be as effectually cut off as if it had not been placed there.

222. "*A small quantity of manure* with frequent tillage, will produce a greater crop than a much larger supply with little or no tillage."

Art. XXIII.—PRESERVING RUTA BAGAS.

223. As soon as you find them *running up into seed stalks*, let them all be taken up, cut off the leaves, pick out all bruised or decayed ones and put up in hills or a cellar as you would sweet potatoes. (See Art. 30.) If you can expose them one day to the sun, it would be desirable; they should not be taken up in wet weather.

Art. XXIV.—DALE'S YELLOW HYBRID TURNIP.

224. ***This is a mule or hybrid***, between the ruta baga and the white globe. In hardiness, firmness of texture, and keeping properties, it is next to the ruta baga; but requires shorter

time of growth, and may be sown later, consequently valuable for sowing when ruta bagas have failed, or were not sown in season. Cultivate as you would the ruta baga.

ART. XXV.—FIELD CULTURE OF CARROTS.

225. *A deep sandy loam is the soil* best suited to the growth of this root. It should be well turned up to the depth of a foot or more, and if manure is to be applied, it should be well rotted.

226. With the plough run deep trenches, strew the manure at the bottom and throw up a small ridglet on the top by throwing up the earth with the plough from both sides, then trench or drill and sow on this ridge.

227. The early horn, and long orange, are considered the best for table use; and the long red for field culture to feed farm stock.

228. *The seed should be of the last year's growth*, and must be sown on the above ridglets, which should be about eighteen inches apart. When up, thin out the plants to six inches in the rows. Two pounds of seed will sow an acre.

229. *It is an excellent substitute for grain* in feeding horses; increases the quantity and improves the quality of milk from cows fed on it; and is eaten and relished by all kinds of farm stock.

230. The seed being very light, is apt not to vegetate well when the soil is light. Large growers prepare it before hand, by mixing a peck of road sand with two pounds of seed, several days before sowing, moistening and turning the mass often. By this method all the seeds grow, come up quickly and regularly, and gets the start of weeds and grass.

231. *An acre of carrots will keep a horse* the entire year; seventy pounds of carrots a day, cut or whole, and mixed with chopped hay or blades, is sufficient for a horse.

232. *Carrots should be thinned early*, you may at first leave them three inches apart, and when the size of an half inch in diameter, thin out to six inches, and those you take up may be used.

ART. XXVI.—PARSNIPS.

233. This requires the same treatment as the carrot. It is more nutritive and the product greater than the carrot, and may be grown on stiffer lands. For the table, sow the sugar, and for feeding stock, the large Dutch swelling.

ART. XXVII.—JERUSALEM ARTICHOKE.

234. This vegetable is sold in the Charleston markets, and commands a ready sale. It makes a delicious pickle, and when cooked as directed, (parag. 1163, Art. 116,) is considered by connoisseurs as a luxury.

235. *The ground intended for this crop* should be well ploughed to a good depth, in January, February, or early in March, (the earlier the better,) then immediately check off four and a half feet each way with the bull-tongue plough, or what is better, the horse driller, and dropping one artichoke or cutting in each cross of the check, cover them with the plough.

236. About the time they are well up, plough them as you would corn, and when about a foot high, cross-plough them, and you are done cultivating them *forever*. The first year they will yield a good crop, (it is said four hundred to seven hundred bushels per acre,) and if the soil is good, will improve for two or three years, till they about double the product of the first year.

237. Market gardeners, should plant a bed in some out-of-the-way part of their garden or farm, as they give no trouble after being planted and worked twice, but will continue to yield year after year. In fact the difficulty is to get rid of them; and not the production of them.

238. Its great yield with little labour in cultivation, makes it the most economical food for hogs that can be grown.

239. They will freeze and thaw all the winter, but will be as good in the spring as if they had been put up in a cellar. The only way in which they are injured is by exposure to the air long enough to let them get dry, when they wither up to hard sticks.

240. *Hogs should be turned on them in November*; when the trouble of feeding is over until spring, for each hog roots for his living. Hogs if suffered to root them, will be of advantage to them by breaking up and softening the soil as far down as it is pulverised.

241. *Sows with suckling pigs should not go on them* as the artichokes injure the qualities of the milk, so as to cause sucking pigs to dwindle, but as soon as they are weaned they will do finely by rooting for their living.

Art. XXVIII.—SWEET POTATOES.

From an article over the signature of "John's Island," in the Southern Agriculturist, 1839.

242. "*High sandy, or yellow soil is the best*, both for roots and slips. On new lands care should be taken that the leaves if not decayed, they should be burnt; but if they are it will do well either for roots or slips.

243. "*The best method of manuring land* for sweet potatoes, is by moveable cow pens. It saves the time and labour of carting out manure, and it also yields a greater return than any other mode that has ever been practised. You should commence making your cow pens just early enough to allow you time to go over your land by the time you are ready for planting. After you have finished, you will find that the land will become hard and compact. Then mark off your land into lines five feet apart so as to have twenty-one rows or beds to a task (or one fourth of an acre.) Next run two furrows with the daggon plough down each line, by which the soil will become loose and mellow; and now bed up so as to finish by the latter part of March, when the seed should be planted about six inches apart.

244. "*If you have not cowpened your land*—compost, cotton seed, rotted marsh or sedge, and also mud, are excellent manures, if properly applied. You must cover these manures well and give them time to rot in the land before planting, (unless they are well decomposed before used.

245. "Cotton seed if applied in proportion of one to two bushels to the bed, and covered early, so as to allow it time to vegetate, is good for either roots or slips.

"*Salt mud is best on high land;* it may be used on other lands as the maturer of the roots. Marsh and sedge, if applied in proper quantities, when rotted, is also excellent. Rye, oats, and green crops, if you plough the stubble in, will act as a powerful manure.

246. "*As soon as the potatoes are up*, carefully pick out all grass and weeds from the top of the bed, so as not to injure the roots of the young plant. As soon as it begins to shoot out vines, the grass should be again picked, and the dirt must be hauled up to the plants. The hoe should not be used at this time; it does more harm than good.

247. "*There are various kinds of sweet potatoes*, viz: The yams or spanish leather-coat; brimstone, with red and white skins; red, with white hearts. *The yams or spanish* potatoes will thrive well on high land which is manured. They produce largely, but do not come very early. They are the best potatoes to keep.

248. "*The leather-coats* much resemble the yams, and differ from them only in size and flavour, being larger and more mealy. *The brimstone are* an early potatoe, and will do well in almost any soil; but they will not do to keep as a provision crop.

249. "*The red with white hearts* are the earliest potatoe—they produce largely on any soil and keep well, and as an early crop, are generally preferred by the negroes. *The leather coat potatoe* is the most delicate and best flavored for table use."

ART. XXIX.—SLIP POTATOES.

Extract from a letter to the St. John's Agricultural Society, by JOHN LA ROCHE, ESQ., *published in the Southern Agriculturist.*

250. "*The land for this crop*, ought to be tolerably high and dry; listed up as soon as you have finished your cotton and corn land; twenty-two, or twenty-three beds to the task (one quarter of an acre,) if level.

251. "When you are done manuring every thing else, immediately commence making a collection about the centre of the patch, of the necessary quantity of manure for this crop. Thus, a layer of salt mud, (*or old pond or ditch mud,*) then a layer of oxen pen, or stable litter, then cotton seed; and again, compost of any kind, mud, then cotton seed; and so on, till you are sure there will be enough for the whole, at the rate of about one and a half bushels to each task row.

"About ten days before your vines are ready, strew this manure on the list, and cover it lightly with the hoe, then run a bar shear plough twice in each alley, throwing the dirt to the list.

252. "*When the planting commences*, I am particular in requiring that the vines be covered, by putting from seventy-five to eighty hills on each bed, with only a hoe full of earth, if the weather be favorable, and patted directly on the top.—And here I must remark, that I attribute my success, mainly to the large number of hills on the bed."

Art. XXX.—ON THE PRESERVATION OF THE CAROLINA, OR SWEET POTATOE.

BY JOS. F. O'HEAR, ESQ.

253. "The great secret is, first to take them in just before a frost has nipped the vines, then to house, or bank them before sunset. The cut or bruised ones, should be thrown out. Having prepared the spot for banking, by hoeing it off clear in the morning early, to expose the bare ground to the sun and air all day, proceed by placing the sound potatoes on the bare ground, carefully bringing the heap up to a point in the form of a cone, containing not more than twenty bushels, or in such quantities as will serve for a weekly allowance; cut straight corn stalks, the *full length*, to reach from the ground to the top of the bank, two courses at least deep, then cover them with dry pine trash, and the whole over with earth, four or five inches thick. Place a bunch of pine trash on the top of the hill, and cover this with a board, or piece of bark, large enough to protect from rain, leave it so fixed for

four or five days, if the weather be mild, and then take off the board, and bank up with earth solid. After a heavy rain, supply any dirt that may wash off. When severe cold approaches, thicken the cover of earth on the north east side.

254. "*Potatoe cellars* possess some conveniences, first, inasmuch as they enable you to house your potatoes early, without the labour and time consumed in banking; second, you can remove such quantities as you want, without labour and exposure of those remaining. Cellars ought to be made as nearly air tight as is practicable with earth and wood; no flues or chimneys are necessary. Upright walls are preferable to those made with puncheons, as are common over the low country, which rot soon and sink, unless renewed every year. The best mode of constructing a cellar, is to place good durable posts in the ground—grooved to admit puncheons; clay up well, and close to the plate, then line the inside of the house with rough boards, or clap boards, and fill in tight with dry pine trash; throw across joists, and floor with rough boards, or common rails; cover the roof with nailed shingles, (tight) and fill up the loft with corn husks, or coarse hay, or straw, for your stock in the spring of the year. This will serve to exclude the air, and absorb the moisture arising from the latent heat of the roots; the door to be made of seasoned boards, grooved and tongued. Leave the door open in good weather, and have a smoke raised night and morning, for three or four weeks, regularly every day. Have bins constructed roughly, to prevent the pressure of too large a mass together, leaving a passage way, if it is preferred, through the whole length of the building. Instead of placing the potatoes on the ground, it would be preferable to place dry poles, or logs on the ground, and floor with rough boards or puncheons, to keep a passage open under the whole mass, which will be pervaded generally by the smoke. The exterior of the building, being similar to a common negro house, will last many years; dig a trench around the outside, to keep the building perfectly dry.

255. "All of the materials used in building cellars of any description, should be well dried. Pine trash about banks, may be dispensed with, if three or four courses of corn stalks are made use of. Cellars made of brick, are in some places used with success; and there can be no doubt, that if made of pisé-work, they would answer admirably." (For the method, see So. Agriculturist, 1838.)

Art. XXXI.—FORWARDING SWEET POTATOES FOR AN EARLY CROP.

256. *Proceed in making your bed*, which should be twice as long as it is wide,—say twenty feet long, and ten feet wide; exactly as you would in making the hot bed, (paragraphs 38, 39 and 40, Art. 2,) with this difference, instead of filling up six inches with earth, let only four inches of mould or earth, be put on the manure.

Then place your cuttings, or small potatoes, an inch apart on this mould, and cover them with two inches more of the same, thrown over them lightly, but not pressed down. The frame, which may be made of rough boards, (and as directed in paragraph 37, Art. 2,) may be covered with boards also, if you cannot conveniently procure sashes; but the latter are to be much preferred.

257. *And now while your sets are sprouting*, prepare your land, which should be high, sandy, or yellow soil, lay it off in ridges, at four feet apart, by listing in all the stubble, &c., with the hoe, then manure as directed in paragraph 151, Art. 29.

258. In three or four weeks from the time of planting, your sprouts will be three or four inches in height; and now fit to plant out; (provided, the bed has been attended to, as directed in paragraphs 42 to 47 inclusive, Art. 2,) taking advantage of such a day, as is fit for putting out cabbage plants; but be sure that the soil is not too wet at that time, for that is as bad as being too dry.

Draw the plants, by placing the left hand on the earth, near to the sprout, to steady the set, or mother root, which might be pulled up with the shoot, which is disengaged by the right hand; taking care that in disengaging the shoot, the fibrous roots of the mother root are not injured, for these will afford a succession of shoots. The hand dibble, and setting stick, (Figs. 8 and 4, of Art. 49,) are used to set these plants out, and they should be placed sixteen inches apart, on the top of the bed, and as deep as the first leaf only, (read Art. 8, paragraph 110.)

259. As soon as the plants have fairly started to grow and run, with a single horse plough, throw up a furrow to them on each side, keep the grass clear, until the vines begin to run freely, after which they must not be disturbed.

In this way early potatoes may be procured for market, and will well repay the additional trouble of the hot bed.

260. *The early part of March is a good time* to plant your sets in the hot bed, (if the season is moderate, but if severe, defer it a week or ten days, or even longer,) some may be tried in February, and if the season is early, they will well repay you.

ART. XXXII.—INDIAN CORN.

Extracts and hints from the "Report of the Committee on Corn," appointed by the "Planter's Society, of Fairfield district, South-Carolina." JOHN DAVIS, ESQ., *Chairman.*

261. "*A proper selection of seed corn*, is regarded an object of great importance; because as in the animal, so in the vegetable kingdom, "like produces like." Every species in creation (the which is procreative) may be improved in quality and fruitfulness, by a judicious choice of breeders; the converse of the proposition holding equally good. Twin corn like the twin ewe, is most apt to produce twain.

262. "*The varieties of the Indian corn*, may be summed up in two general classes, viz:—the gourd seed, and the flint corn: the first called the gourd seed, because of its similitude in shape to the seed of the large gourd—and the flint, so named, because of its flinty hardness. Amongst these two general classes, there are varieties of colour—white, yellow, purple, and mixed colours—all of which may be crossed, or amalgamated by the deposit of the farina, or anther dust from the tassel of one plant, upon the ear and stalk of the other species.

263. "*The seed intended for planting*, should be not only of the most prolific and best species, but also well matured.

"There is no doubt that the selection of seed, is a desideratum in the growing of all plants.

264. "A query for consideration arises; *which is the most profitable to the planter, the gourd seed or flint?* It must be admitted, that the flint is the heaviest, according to measure, and contains more nutritive matter; but it is equally certain, that the gourd seed will measure most from the acre, with equal advantages otherwise, and sufficient too to make up

more than the loss of weight. Admitting, however, as an hypothesis, that this should not be realized, your committee on other grounds, would give the gourd seed a decided superiority.

265. "*It is more easily ground into meal:* thirty bushels of gourd seed would be ground with as much ease, as twenty-five of the flint. It is more digestible: horses and hogs, masticate it with less difficulty.

266. "It is observable, that the Indian corn is most peculiarly adapted to certain climates and soil: it is generally admitted, that the gourd seed corn will finally change into flint corn, if cultivated for a few years in the low country of South-Carolina; and it is also admitted, that the same quality of lands will yield more corn in North-Carolina, or Tennessee, than in South-Carolina.

267. "Your committee, in thus contending that the flint is a degenerate corn, would merely add, that if the grain arrives at higher perfection, in some climates North of South-Carolina, it would be advisable to procure seed from thence—provided, the due attention had been given to its improvement."

268. The following plan has been advantageously pursued by the compiler, and several of his friends, viz:—before harvesting your crop, select from the most healthy and best bearing stalks the lowest ears, these gather with the inner husk on, or as it is called, slip shucked, which place carefully away in a safe place, until the season for planting, then take off the shuck and expose the ears (for a day or two before you shell them,) in the open air or sun, and to every three pecks of flint corn, mix one peck of the large, white grain, North-Carolina, or Collins' corn. This will give you a cross, between the flint and gourd seed, and a grain, much admired by every planter who has seen it. It will degenerate every year, and finally become flint corn; to prevent which, the gourd seed should be mixed with it every other year, if it can be conveniently procured; but certainly every third year.

269. "*The best time for planting.*—The sooner we procure a stand, the more sure the crop, particularly in uplands. In low lands, subject to be overflowed, it will be unsafe (on account of spring freshets,) to procure an early stand. Corn planted in March, in general, has the advantages of the spring seasons and dews. Whatever the reasoning may be, the experience of the intelligent planter will testify, that in three years out of four, March corn will produce the most abundant and perfect grained crop.

270. "*The late corn is liable* to run up tall and slender, bearing therefore smaller ears. Independant of the advantage of a more abundant crop from early corn, it is an object to have the corn crop laid by soon, to enable the planter to look well to his other crops. Besides, it suits well for the pea crop.

271. "A third consideration is, *the composition and fertility of the soil.* If too much clay (and if old land,) in a few days after a rain, it becomes too stiff for the plough, and too close for the roots to penetrate: if too sandy and porous, the strength of the soil quickly evaporates, leaving the roots of the corn too much exposed to the action of sun and air, in the heat of summer: if of a sandy bottom, as well as surface, the little strength of the soil both evaporates and sinks.

"It is better economy to pay soundly for a fine grit surface, and clay subsoil, (the land being level,) for ten years use, than to cultivate a stiff clay, or coarse sandy land, in corn, *free of charge.*

272. "A fourth consideration is, *the preparation of the ground*, and best plan of planting. All old lands are the better prepared, by being ploughed and open to the winter freezes; and all ploughings should be deep and close.

"In planting, it may be expedient to put in seed enough to accommodate birds and squirrels, (See Art. 4, paragraphs 67 and 68,) and still have a stand left: it is much better to thin out five plants, than to replant one.

273. "*If the stand is very bad*, it will be safer to plough up and plant over again, than to replant, unless the replanting is done in time to tassel with the first planting." NOTE.—Every planter must have observed, that in a field of corn where there are two different plantings, as soon as the first planting begins to tassel, the latter, though perhaps not as far advanced in growth as the first, also immediately begins to shoot out and tassel, no doubt it is caused by the farina or anther dust of the former, falling on the stalk and leaves of the latter.—*Compiler.*

274. "*What is the best distance?* is the fifth interrogatory in planting corn. This must be varied in different climates and soils: not so apt to fire in cold climates, it will there warrant closer planting. On uplands, and in the hill, with one stock, four by three feet; if two stocks, five by five feet.

275. "The sixth inquiry is *the best plan of manuring corn ground.* It would be lucrative in every sense, to manure corn hills without exception, whether the lands are old or new: if new lands are manured, their productiveness is increased in

the same proportion to old lands fertilized, and the planter is remunerated tenfold for his labour. To manure corn lands, open deep with the plough, (*or hoe*,) plant five grains in a hill, cover *lightly* with the hoe, (and if stable or yard manure, throw on one spadeful to the hill; if cotton seed manure, one handful,) follow after with a plough on each side, so as barely to make the mould or earth, to meet over the manure. This will on the whole, make a deep cover, but the manure will prevent the earth baking over the corn, so that it will still come up.

276. "If the manure is not thus covered, (especially cotton seed manure,) its value is lost by evaporation.

277. "*The plan for cultivation* is the seventh consideration. When the ground is in good order, the two first ploughings should be ever very deep and close. This will cause the earth to retain moisture in summer, and the roots of the corn to run deep in the outset, so as to prevent the plough from cutting them too much in the after ploughings, which should be shallow.

278. "*In the production of corn*, let this be a rule—*deep* ploughing in the *spring*, and *shallow* in the *summer*. Corn should be tended fast; that is to say, the plough should go over the ground every three (never less than four) weeks. It is in the very nature of the soil, that in its cultivation, it should be stirred often; it should be turned to the sun and atmosphere. If the ground is not *constitutionally* hard, it is never too dry to be ploughed, but easily may be too wet.

279. "Many destroy the present crop, *by one ploughing where the ground is too wet:* and unless the earth *pulverises*, or *crumbles* as the plough breaks up, *it is too wet*. When the ground is ploughed too wet, the destructive effects are only prevented, when a shower of rain falls before the sun dries the earth.

280. "*Two hoeings are necessary only* in a crop of corn; a light moulding after it first comes up, and a flat hill when laid by: four ploughings in poor ground, and three may answer in rich ground, if the corn makes with rapidity. *The last working in rich ground*, should be when the corn tassels. To cut the roots when the corn is shooting, checks the growth, thereby preventing the tassel from emitting the farina, and thus impedes the fecundation in the shoot or ear.

281. "The eighth process of the corn crop is, *to gather the blades for fodder*. By gathering the fodder before the *milky*

substance has become calcareous, many planters prevent the ears from maturing, and certainly looses much of its saccharine and oily matter. In gathering fodder, never stop for clouds: to observe them, not unfrequently insures a loss of fodder.

282. "The ninth and last process *is gathering the corn.*—Corn may be also prematurely gathered, producing when gathered in this way, a withering and shrivelled grain: this process should never be undertaken till the stock has become dry."

283. If you intend keeping your corn any length of time, let it be harvested in the slip shuck.

Art. XXXIII.—COW PEAS.

284. This crop, if grown between corn, is generally planted about the middle of June, and is best drilled from stalk to stalk. If the corn is five by five feet apart, the quantity of seed required for an acre, is a peck; but if only one hill or chop, is put between the stalks, a half peck will be sufficient, planted thus, on high and good soil, the average yield is about five or six bushels per acre.

285. When planted as a separate, or standing crop, they should be put on ridges five feet apart, dropping ten or twelve grains in chops, made with the hoe, about two feet apart, on these ridges; this requires about three half pecks of seed to the acre, and the general product is from ten to twelve bushels.

286. Cow peas planted *subsequently* to the full moon in July, are supposed to be more productive, than when planted at the same period in June. Early plantings are apt to produce an exhuberant crop of vines, but few pods; consequently, if planted as a fodder crop, to be cut and cured like hay, early planting would be advisable. This fodder is preferred by horses and cattle, to the best hay or blades, and an acre has yielded as much as four tons, but the average crop is about half that quantity.

ART. XXXIV.—FODDER CORN.

287. *At the usual planting season*, with the driller, (Fig. 1, Art. 49,) having the teeth adjusted to four feet apart; or with the bull tongue plough, trench the ground four feet apart, and in these trenches, sow the common Indian corn, at the rate of two and a half bushels, or more, to the acre. If the land has been well ploughed up, and pulverised before planting, so much the better. As the corn advances in growth, give it one or two good ploughings, that it may get the start of the grass and weeds, which it will soon keep down by its shade. You neither hoe nor hand-pick it, the two ploughings is all the culture it receives, and you should throw the earth fearlessly to the corn in ploughing.

288. *When it begins to tassel*, it is fit for use, cut it up close to the roots with a briar scythe, or sickle. Then take it to your chopping, or cutting box, and when cut, mix it with oats, or other grain, and feed to your horses and oxen. While using this, they require no other fodder. "If sown early in April, it will tassel about the middle of June, and come in when the last year's crop of blades and fodder is exhausted, and there is a pressing necessity for fodder."

289. *It may be cut and cured* as you would hay, with this difference, that it requires a longer time to cure; three or four days will suffice, if you have a good sun. Cut in the morning and spread to dry, until three or four o'clock, (stirring it once or twice during the day,) after which, put it into little stacks, to be spread out again the next day, which continue to do daily until cured.

290. *In housing or stacking*, let one layer of tassels be to the right, and another layer be to the left, and so on up. This will so dispose the blades and stalks, that one will absorb the moisture of the other.

ART. XXXV.—GUINEA CORN.

291. "*Plant in April*, on ridges or beds, (or if you choose, flush on land that should have been previously well ploughed and pulverised,) your beds or drills should be four feet apart,

and the seed dibbled in, ten or twelve inches apart on the beds; dropping five or six seeds into each hole, and when about six inches high, thin out to two plants, give it one or two ploughings, and keep clean with the hoe.

292. "*It looks poor and discouraging, until* it gets knee high, when it starts and grows very fast. It commences to ripen in August, and by the middle of September, the bulk of the crop will be ripe, the earliest corn produces the most, and the earlier planted the better. When the grain is ripe, it looks brown and hard, and should be cut off with about a foot of the stalk, and spread out on a scaffold or floor, until the stalk becomes dry, or it will heat. It is easily threshed out; a good plan is to half thresh it, and then give the stalk part to mules and horses.

293. "*As a winter food*, it is very good for work horses, and is not inferior to Indian corn for poultry."

ART. XXXVI.—BROOM CORN.

294. *This very useful plant* may be seen growing in small quantities, in almost every farm in the Northern and Eastern States. Not only are large quantities of brooms and brushes manufactured and exported, but its seed used as a food for all kinds of stock.

295. *The average yield is* from six-hundred to one thousand pounds of clean brush to the acre, and from sixty to one hundred bushels of seed, the latter is said to be superior to oats for horses.

296. *Sow, cultivate, and cure*, as you would Guinea corn. (See foregoing Article.) Why should we import from the Northern States, that, which we can so easily and cheaply grow ourselves? a few feet of ground, will yield enough brush to supply several families. To prevent the broom, or tassel from falling, it should be bent down, as soon as it is full grown; if you neglect this, your brush will be lost, as it cannot be made straight again, and consequently will be unfit for manufacturing.

Art. XXXVII.—SUN FLOWERS.

297. *This very useful plant* is seldom met with, except in gardens, where it is cultivated as an ornamental flower. But I can recommend it highly as a food for poultry and hogs; for these purposes it is equal to the same weight of corn.

298. *It yields a large quantity* of seed to the acre, and is planted and cultivated in the same manner as Indian corn.—It yields one gallon of oil to the bushel, and after extracting the oil, the residuum is excellent food for hogs and cattle.

299. *A tea made of this seed*, and sweetened with honey, is equally as good, if not superior, to flaxseed in catarrhal affections.

Art. XXXVIII.—MUSTARD.

300. "There is a *white seeded sort* and a *brown seeded sort.* The white mustard is used in salads, along with cress or pepper grass, and is sown and cultivated in the same way.—(See paragraph 407.)

301. "*The black or brown seeded*, is that which table mustard is made of. It is sown in rows two feet apart, early in the spring. (The last of February is a good time—but if too cold, early in March.) The plants ought to be thinned to four or five inches apart. Good tillage between the rows—The seed will be ripe in July, and then the stalks should be cut off, and when quite dry, the seed threshed out and put by for use.

302. "*Why should any man that has a garden buy mustard?* Why should he want the English to send him out in a bottle, and sell him for a quarter of a dollar, less and worse mustard, than he can raise in his garden for two cents?

303. "*The English mustard* is in general, a thing *fabricated.* It is a composition of *baked bones* reduced to powder, some *wheat flour*, some *colouring*, and a *drug* of some sort that gives it the *pungent taste.* Why should any man that has a garden, buy this *poisonous stuff?* Whoever uses this mustard *freely* will find a burning in his inside long after he has swallowed the mustard.

304. "The *mustard seed* ground in a little mustard, (or pepper) mill, is what he ought to use. He will have bran and all; and his mustard will not look yellow *like the English composition;* but, we do not object to rye bread on account of its colour! Ten pounds of seed will grow upon a perch of ground; (sixteen feet and a half,) and ten pounds of mustard, is more than any man can want in a year.*

305. "The plants do not occupy the ground more than fourteen weeks. This, therefore, is a very useful plant, and ought to be cultivated by every farmer, and every man who has a garden."—*Cobbett.*

Art. XXXIX.—BENE.

306. *Sow the seeds of this valuable plant*, in beds or drills, three feet apart; you may use the hand dibble, (Fig. 8, Art. 49,) making the holes six inches apart, and into these, drop four or five seeds; when up thin out to single plants; keep clean, with good tillage between the rows or beds.

307. *The seeds of bené contain* a large quantity of oil, which is said to be of superior quality. Bené is also used in cakes and pastry, and the plant for its medicinal virtues. It is sown early in the spring, and when ripe, the stalks are cut off and put by on a scaffold for a while to dry, and then threshed out.

Art. XL.—TART RHUBARB.

308. *All the sorts of Rhubarb* may be raised, either from seeds, or by dividing the roots. The best mode is from seed, which sow in November or March, in light sandy soil, dug up three spits deep, as you would for asparagus, and the plants, if kept eight or nine inches apart, will be fit to transplant in autumn, and for use the following spring.

* Five pounds in Carolina is a good crop.

But when plantations are to be made by dividing the roots, care should be taken, to retain a bud on the crown of each section; then plant in rows, three feet by two, for the palmatum, and five feet by three, for the giant, goliah, and other large varieties. Dry weather, an open condition of the ground, and a temperate, unfrosty state of the atmosphere, should be preferred.

309. *When the growth becomes established*, the ground must be kept free from weeds, and if dry weather supervene, water ought to be freely given round the roots two or three times, at intervals of four or five days.

310. *It is best, not to touch a leaf or stalk*, the *first* year; but in autumn when the leaves are all decayed, they should be laid in trenches between the rows, sprinkled with a little salt, and covered with the earth that had been dug out; thus furnishing a portion of the manure that will be annually required.

On the approach of winter, lay some good old rotten manure, several inches deep round each plant, to the extent of two feet. On the opening of spring, the whole should be well forked up.

311. *The leaves, when wanted for use*, should be pulled obliquely, and not cut. (Use of, and directions for preserving, &c., see Art. 116, paragraph 1160.)

ART. XLI.—ARROW ROOT.

BY WHITEMARSH B. SEABROOK, ESQ.

312. This plant in Botany, *Maranta*, a genus of the *Monandria Monogynia* class, is a native of the West Indies, and has long been justly esteemed for its valuable qualities.—History acquaints us, that it was a certain antidote to the milk of the Manchinal tree, and that the Caraib Indians, who invariably poisoned their arrows with this deleterious fluid, appeared to have considered the toubola (Indian) as the only remedy sufficiently powerful in its application, and instantaneous in its effects, to arrest its direful progress. Whether applied externally, or administered as a ptisan, the consequences were equally happy. As the milk of machinal operated

rapidly, and as the arrow root was the only antidote, the inference is fairly deducible, that against *any poison if timely used*, it would serve as an effectual safeguard. As a *wholesome*, *nutritious*, and *pleasant beverage*, experience bears ample testimony.

313. To the infant, the aged, or the diseased, no food can be administered, which will be more palatable, or more easily digested.

In bowel complaints, it is of itself a remedy; and in dyspeptic cases, and acute diseases, it constitutes the most proper aliment; as a diet drink, no article in the Materia Medica is to be preferred. In fact, the stomach will readily accommodate itself to it, when every other nourishment has been rejected.

314. If such are the useful and medicinal virtues of the arrow root, its cultivation, for domestic purposes, should be general: twenty feet square of earth, will yield a quantity sufficient for a large family for two years. *The method of culture* is simple, and is as follows:—

315. Upon a piece of ground, moderately high, and of a loose soil, make small beds three feet asunder, and at the distance of every two feet, drop one seed, which should be covered about two inches deep. The middle of March is the proper season for planting, and no care or attention is subsequently required, but to keep the plants free from grass and weeds.

316. *After the first frost*, they should be dug; and when you have selected the seed, it is necessary for their preservation, that they should be buried at least one foot in some dry and warm spot. The preparation of the root for food is tedious, and in consequence of the toughness of the outer coat, it would be advisable, to perform the operation as speedily as possible after digging.

317. *As soon as this is effected*, grate the roots in a clean vessel of water; then pass the contents thereof through a sieve; this must be repeated, taking care to change the water at every successive operation, so long as any coarse particles remain in the sieve. The water is then allowed to settle, and if it exhibit a clear and natural appearance, the sediment is in a fit state to be dried, which should be done, if possible, in the sun, and in a confined situation, where no dust can reach it.

318. *To a table spoonful thus prepared*, pour on a pint of boiling water, stirring it at the same time, briskly; to which

add a little sugar and nutmeg, and you will then have a jelly pleasant as it is healthful. (To make arrow root pudding, see Art. 116, paragraph 1161.)

ART. XLII.—EARLY MELONS, CUCUMBERS, &c.

319. *The production of early melons, cucumbers, &c.*, is the ambition of all good gardeners and farmers; and as but few can be raised in a single hot bed, and it is too expensive and inconvenient, for most persons to make many hot beds, the following mode is recommended, not only as more economical and convenient, but more certain.

320. About a month or so earlier, than it is usual to plant these seeds, procure a number of good sized ruta baga turnips, cut off the tops, and with a knife, or other instrument, scoop out all the inside, so that they will resemble gourds or cups, fill the cavity of this cup with good rich earth, and plant in each a few seeds of melons, cucumbers, beans, or seeds of any other plant that you may desire to have early; they should then be placed in a warm part of the house, or in a protecting frame, (well made and secured from frost,) and the earth in the cup be kept moderately moist.

321. *If kept in a room*, they should be put out in the open air, every good, clear, and fine day; and if in a frame, let them have air, by removing the sashes; by doing this, you will prevent the plants from growing tall and slender, and cause them to become straight, stout, and healthy.

322. *When the season has advanced*, beyond all danger of frost; you may put out these turnip cups, plants and all, in the beds where they are to remain, (but be careful that you put them out, *not too soon*,) the plants will continue to grow, and the turnip cups will soon rot, and enable the roots to extend themselves without bounds, in search of food, and in time, become itself an excellent manure for the plant.

323. *When you set out*, insert the cup in a hole, made just large enough to hold it, pressing the earth well, round about the cup, and drawing a little over the top or edge, up to the stems of the plants, covering entirely the turnip.

324. *To hasten the process of decay in the cup*, you may

(before putting out,) with a sharp knife, cut off the hard rind, from the outside of the turnip, leaving only a thin piece of the rind enclosing the earth. A small hole as large as a ten cent piece, should have been cut in the bottom of the cup, before filling with earth, when first made. (For preparing the beds to put these cups into, read paragraph 325 of the next Article.)

ART. XLIII.—WATER MELONS.

325. *A high, sandy, or yellow soil is the best* for this crop; throw it up with a double plough into beds, or broad flat ridges; let these be ten feet apart, from centre to centre, then run the harrow over each bed lengthwise, several times, so as to break all lumps; let the following compost, 1 bushel road, or street dirt, 1 bushel old stable manure, well rotted, and 5 quarts cotton seed, be well mixed, and dug in at each check, which should be made ten feet apart, on the top of the bed. (Old pond mud, and the dung of pigeons and domestic poultry, are very good manures for this crop.) The cotton seed will sprout in a few days, when each check should be again chopped up with a hoe, mixing the cotton sprouts well with the earth and compost.

326. *Soak your seed in blood warm water* the night before planting, and put five or six seeds in each check, cover an inch deep; should the weather prove dry, give a little water until the plants appear. As soon as they begin to run, train the vines on the beds, that they may run from check to check, and where the vine throws out branches, let a hoe full of rich earth be put on, at every three or four feet, and pressed with the foot. This should be done in wet weather, so as to cause the vines to strike out roots immediately at these joints.—Keep clean of grass, until the vines cover the bed. If managed in this way, they will well repay the little additional trouble, and a task (or one quarter of an acre,) will produce as many large and fine melons, as an acre managed in the usual way.

Art. XLIV.—RUNNING BEANS.

327. "*The prettiest way* for a man who cultivates but little land, to raise his own dry beans for next winter's use is—not to plant the bush kinds by themselves, for this will require too much land, as the product is small—but to raise white *pole* beans. The common case knife beans are excellent for this purpose.

Strike out a dozen (or more) circles on the ground, as large as a cart wheel. Put a wheel barrow load of manure into it, and spade it up with the earth. Drop the seeds in the circle, on the outer edge of the hill, say six inches apart. Then insert eight or ten poles just within the circle, at equal distances from each other, and tie the tops of the whole together —forming a cone. Cover up the seed, and wait the result.

328. "*Each of these hills* will yield you a peck, or a half bushel of dry beans next fall—which if you have but a dozen such hills, will give you, perhaps, half a dozen bushels. This will be enough for your purpose. By this course, but a little land is occupied. Pole beans will yield very much more abundantly than bush beans, and occupy air, whilst the latter must have the surface of the earth."—*So. Cabinet.*

Art. XLV.—MUSHROOMS.

The following directions (by the celebrated Mr. Nicol,) *for making mushroom beds without spawn, are taken from "Loudon's Encyclopædia of Gardening."*

329. "*After having laid a floor of ashes*, stones, chips, gravel, or brick bats, so as to keep the bed quite dry, and free from under damp, lay a course of horse droppings, six inches thick. These should be new from the stables, and must not be broken, and the drier the better. They may be collected every day, until the floor or sole be covered to the above thickness; but they must not be allowed to ferment or heat.

330. "*In the whole process of making up*, the bed should be as much exposed to the air as possible; and it should be carefully defended from wet, if out of doors. When this course

is quite dry, and judged to be past a state of fermentation, cover it the thickness of two inches with light dry earth; if sandy, so much the better. It is immaterial whether it be rich or not, the only use of earth here, being for spawn to run and mass in.

331. "*Now lay another course of droppings*, and earth them over as above, when past a state of fermentation: then a third course, which in like manner earth all over. This finishes the bed, which will be very strong and productive, if managed properly afterwards. Observe, that in forming the bed, it should be a little rounded, in order that the centre may not be more wet or moist, than the sides. This may be done in forming the sole or floor at first, and the bed would then be of equal strength in all parts. If it be made up against a wall in a cellar, stable, or shed, it may have a slope of a few inches from the back to the front, less or more, according to its breadth. I have sometimes been contented with two courses as above, instead of three; and often when materials were scarce, have made them up slighter, thus: three or four inch courses of droppings, with one inch of earth between each, and a two inch covering at top.

332. "Such a bed as this, I have had to produce for ten or twelve months together; but very much depends on the state of the materials, and on the care taken in making it up, also on the after management.

333. "*The droppings of hard fed horses only are useful.*— Those of horses kept on green, will of themselves, produce few or no mushrooms. I have made up beds from farm horses, fed partly on hard, and partly on green food, and from carriage or saddle horses, fed entirely on corn and hay; treated them in the same way in every respect; and have found, not once, but always, those made from the latter most productive.

334. "*Droppings from hard fed horses may be procured* at the public stables in towns, or at inns in the country, any time of the year; and if the supply be plentiful, a bed of considerable dimensions may be made, and finished within five or six weeks. In as many more weeks, if in a stable, or dry cellar, or in a shed, it will begin to produce, and often sooner; but if the situation of the bed be cold, it will sometimes be two or three months in producing mushrooms."

335. *There are several kinds that are poisonous*, and it would be well to describe the mushroom. London says, "it is most readily distinguished when of a middle size, by its fine pink,

or flesh coloured gills, and pleasant smell. In a more advanced stage, the gills become of a chocolate colour, and it is then more apt to be confounded with other kinds of a dubious quality; but that species, which most nearly resembles it, is slimy to the touch, destitute of fine odour, and has a disagreeable smell.

336. "*Again, the noxious kinds grow in woods*, or on the skirts of woods, while the *true mushroom* springs up *chiefly in open pastures*, and should be gathered *only in such places.*"

337. BRIDGEMAN observes, "*unwholesome fungi* will sometimes spring up on artificial beds in gardens; thus, when spawn begins to run, a spurious breed is often found to precede a crop of genuine mushrooms. The baneful quality of the toad stool, is in general, indicated by a sickly, nauseous smell, though some hurtful sorts are so far, without any thing disagreeable in the smell, as to make any criterion, drawn from that alone, very unsafe. The wholesome kinds, however, invariably emit a grateful rich scent.

338. "Great caution is necessary in collecting mushrooms for food, and none but the Botanist should search for any, but the sort we have described." NOTE.—In order to ascertain whether, what appear to be mushrooms, are of the true eatable kinds, sprinkle a little salt over the inner or spongy part; if, in a short time after, they turn yellow, they are unwholesome; but if black, they may be considered as genuine mushrooms.

339. "*Physicians say*, that all the edible species should be thoroughly masticated, before they are taken into the stomach, as this greatly lessens the effects of poisons. When accidents of the sort happens, vomiting should be immediately excited, and then the vegetable acids should be given, either vinegar, lemon juice, or that of apples; after which, give ether and antispasmodic remedies, to stop the excessive vomiting. Infusions of gall nut, oak bark, and peruvian bark, are recommended as capable of neutralizing the poisonous principles of mushrooms. It is, however, the safest way, not to eat any but the well known kinds."

Art. XLVI.—GROUNDNUTS.

340. "These should be planted as soon as the frosty weather is over, in rows five and a half feet distant, two in a hill, three feet apart, on new high land, or on a piece that has rested, or lain fallow a year. Plant flush on the surface, and when well up, thin to one plant, and transplant to gaps, and set out additional rows if you please.

341. "As soon as grass appears, hoe the rows, and with a plough, throw up a furrow on each side, and as the branches spread, continue to throw up two furrows, till the space is broken up; at each ploughing, brush the earth level with the hoe, keeping the bed (at all times) flat on top, and do not throw earth on the branches, as is frequently the practice of negroes, as they bear only from the blossoms. To be convinced of this fact, tie a piece of white cotton yarn close to a blossom, and you will find it afterwards close to a nut in the ground.

342. "On a mellow soil, they will produce from forty to eighty bushels per acre. A gentleman of veracity states, that on a quarter of an acre, of loose gravelly soil, cultivated the year previous in cotton, he planted on five feet rows, hills two feet apart, and two nuts in the hill, and measured thirty-five bushels as the produce. Two quarts of shelled nuts will plant an acre. If the groundnuts are good, they will when shelled, turn out one half the quantity."

Art. XLVII.—SPRING CABBAGES.

343. It is a rare thing, if, in the months of May and June, you ever find a good and perfect head of cabbage in our market, or in our gardens; the reason of this is: first, the seed is not of the proper sort, and if of the proper sort, perhaps not true to its kind; and, secondly, because injudiciously managed in nine cases out of ten.

344. *The month of October*, is the proper season for making your sowings; but be sure that your seed is *genuine European seed*, for without this, all your labour will be in vain. Now to be sure of this, you must *know well the seedsman of whom you*

buy; know that you can depend upon him, and can rely with certainty upon what he tells you, that he is a man that looks well into his business, so as to prevent imposition from those of whom he obtains his seed; for the best seedsmen are sometimes taken in, and there is no help for it, as frequently their orders are sent out for seeds, to men that they know nothing about, and seeds are thus palmed off on them as one kind, when in truth they are very different.

345. *The cost of genuine seed*, even were it treble the present price, had better be paid twice over, than to have all your labour, and trouble in manuring, and preparing the land, sowing the seed, transplanting the plants, and tending them for months, thrown away and lost, as most assuredly it will be, (with spring cabbages particularly,) if they are not from true European seed.

346. If you sow *at the above time*, cabbage seeds of *your own growth*, or grown in Carolina, Georgia, or any other place in North America, from the most solid, perfect, and beautiful heads of cabbage, with the expectation of enjoying fine heads in May and June following, you will most certainly be disappointed. You may obtain a good crop of greens, but rely on it, ninety times out of an hundred, that you will never be delighted with the sight, or taste of more than five, if indeed one single good solid head, in one thousand plants.

347. But if you sow the *genuine English, or European*, and manage as will be hereafter directed, when scarcely a *good bunch* of *greens* (for, you cannot call a few, half yellow and green leaves, eat up to a honey comb by worms, *good greens:*) is to be found in the Charleston market; (which market now ranks second to none in the United States,) *then indeed*, will your eyes be gladdened with the sight, of *fine large solid heads*, perfect in every respect, and not five or ten only, but ninety out of one hundred plants; for it is allowed, that you will sometimes, have five or more in one hundred plants, run to seed.

348. But to proceed,—you have also three great enemies of good spring cabbages to contend with, and these are the *grub worm*, the *green cabbage worm*, and the *cabbage lice*. And how are you to prevent the ravages of that monster, the grub worm?

First, then, in the *choice of the spot for your seed bed*. This should be in an open situation, and the soil of good condition, *not rich*, but not *very* poor, give it no manure, (unless so poor that it actually requires some, and then let it be woods earth,

or pond mud,) but dig it up well with the spade, break all the lumps, and make it fine, then lay it off in beds, not more than three feet wide; draw three drills on each bed lengthwise, one foot apart, and sow the seeds pretty thick. When they come up, keep free from weeds, and stir the earth now and then between the rows, until fit to transplant to the spot, where they are to head.

If you have a moderately low sandy spot, that is not *too poor*, nor *too rich*, (for one is as bad as the other,) it would be well to make your seed bed there.

349. *Your plants generally will look badly*, and instead of green, healthy, full leaved, and short and crisp stems, which if bent, will snap off like glass—will on the contrary, have a bad colour, few leaves, and those small, and on the top of the plant, and stems rather long, and so tough and wiry, that you may twist and bend them about in every shape, without breaking them.

350. No doubt when you read this, you will say, can these plants possibly produce good cabbages, when such are always thrown away, and refused by *every good farmer* and *gardener*, when the most essential points in good plants, are thus entirely reversed? I cannot believe it, I must see it first!

Well, for answer, I can only say, *try it;* but give it a fair trial, do not sow North or South-Carolina, or Georgia, or any other seed, than *real genuine English, or European*, and follow strictly the directions given in this article, and then you must believe, for "seeing is believing."

351. *Now the objects to be attained*, in having plants of the foregoing description are, first, to backen the plants, that they need not be planted out too soon. But the great object is, to prevent the ravages of that *insatiate monster*, the grub worm, which when he finds the stem tough and stringy, looks farther, in search of more delicate and tender food, after cutting one or two. But if the plants are crisp and tender, every gardener and farmer knows, (to their sad disappointment,) that in one night, they will cut down seven-eighths of his plants, that perhaps were put out the day before.

If you had not the grub worm to contend with, when you planted out these plants, you might then change the plan entirely, and raise plants, having qualities and points quite different.

352. *Transplanting.*—The plants (if the seed is sown about the middle of October,) will be far enough advanced,

to be put out some time before they should be; but do not be uneasy—they should not be put out before January or February, when they must be transplanted into a *very rich* piece of ground. For, bear this in mind always—if you wish fine and good solid heads, they must be planted in the *richest spot* you can give them.

353. If you have a piece of ground that has been *cow penned*, or where *heaps of manure has lain for some time*, plough it up well, and with the hoe make ridges, raised eight or ten inches high, and three feet apart, on these transplant your plants, and let the sugar loaves be put twenty inches apart, and the drum head two and a half feet.

354. But if you have not such a spot as the above, you must not spare the manure, on the ground that you do plant. The manure should be well rotted, and scattered thick all over the ground, then plough it, or dig it in with a spade, mixing it well with the earth, making the ridges, and immediately after planting, as always advised. If the weather is dry, you may give a little water, until the plants take root. Keep clean, and hoe often, and in a short time, they will be so much improved, as scarcely to be known as the same plants.

355. But we still have two great enemies yet to subdue, before we can obtain perfect heads of spring cabbages: and they are the *green cabbage worm* and the *cabbage lice*. Now, as soon as you have put out your plants, begin and prepare for them in the following manner.

356. *Procure a large barrel or hogshead*, or as many as may suffice, and place them in a spot convenient to the cabbages. Collect the ripe berries of the *Pride of India* tree, fill each cask with one-fourth berries, and three-fourths of water, and let it steep until these worms and lice appear, then with a water pot, having a *fine rose*, sprinkle the plants with this infusion once or twice a week, replenishing the barrel each time, (to keep up a regular supply,) with the same quantity of fresh water that you have taken out, and stirring the water and berries well up each time you add to them; you may now and then, put in a few fresh berries.

357. By doing this, you will most generally save your plants, and prevent them from being eat so much, as to resemble the honey comb more than cabbages. In some seasons, even this will fail as a preventive, and they must take their chance, for I know of nothing else that will answer the purpose.

358. *But this you may rely on*, that plants put out and grown on a spot that has been *cow penned*, or manured with *urine*, is seldom, and then in a slight degree only, attacked by the grub worm or lice.

359. As soon as your cabbages have attained their full growth, they should be cut and used; or they will rot and be lost, this is caused by the hot suns, and heavy rains in May and June.

Art. XLVIII—HERBS.

FROM MARSHALL'S GARDENER.

360. *Balm* is either plain or variegated; but the former only, is cultivated as a medicinal herb. It is propogated by parting the root, either in autumn or spring, but, rather the latter.—Slip off short pieces with roots, and plant them a foot or fifteen inches asunder, giving a little water. The balm that is cut to dry, ought to be cut just as it gets into flower, being then in the highest perfection.

361. *Dry it in an airy, shady place*, till fit to tie up in small bundles, which must be stored in a dry, airy room. Balm and most perennial herbs, should be fresh planted in beds, every third or fourth year; and every year, in autumn or spring, should have the ground stirred about them, and dressed with a little fresh earth, the plants being previously cut down.

362. *Fennel* (the common sort,) is an hardy *perennial* herb, the uses of which are well known. It may be *sown* either in spring or autumn, and the plants ought to be kept near half a yard asunder; or it may be propagated, by slips from the roots of old plants. It should be constantly cut down, to prevent seeding, which would cover the ground in a very troublesome degree. *Sweet fennel* is an annual, cultivated for its seed in medicine.

363. *Lavender* (that sort commonly cultivated,) is for its pleasant aromatic scent, found in most gardens, and makes a neat perennial edging in large ones. It is propagated by cuttings, or young slips, in April and May, set a few inches asunder in a shady situation, and good soil; and when rooted,

planted out where they are to grow. But, though raised in a good soil, lavender likes a poor and dry one best, to abide in. Set the plants a foot apart from one another.

364. *Marjoram* is distinguished into *pot*, *winter* and *knotted* sorts; the two former *perennial*, and the last *annual*. They are all used for *culinary* purposes, but the knotted is chiefly cultivated as a sweet companion of our flowers. The propagation of it is, by parting the roots of the perennial sorts, in autumn or spring, and by sowing the annual kind in March or April, on a warm border, and light and dry soil. The annual sort should stand at six inches distance, and the perennial at nine or ten. These (and all) herbs are to be cut for drying, just as they get in bloom.

365. *Mint* is a salutary herb, of which we have two sorts, the spear, and the pepper; the former for culinary, and the latter for medicinal purposes. Mint is propagated by pieces of its roots, or rooted slips, in the spring, set an inch or two deep, and eight asunder, on beds four feet wide. Cuttings will quickly strike root, in any of the summer months. It delights in a moist soil, and new plantings (particularly cuttings,) should be well watered in a dry time.

366. *Pennyroyal* is a *pot* and *medicinal* herb, of the mint species. There is an upright, and a trailing sort of it; but the latter is that chiefly used. This is propagated by rooted branches, of which it affords plenty, as it spreads fast; and it will grow in the summer months from slips or cuttings.—Set them a foot asunder, in spring or autumn, and in a strong, moist soil, it will most flourish. If, however, it is suffered to mat thick, it is apt to rot.

367. *Sage*.—There are several sorts of it, but the common red is that used chiefly for culinary purposes, and the green, both for these, and medicinally for tea, &c. There is a narrow leaved green sort, called *tea sage*, or *sage of virtue;* but the broad leaved green is reckoned by some to be better, not being so heating, and unpleasant to the taste. Sage is propagated by slips, or cuttings of the last year's shoots, in April or May, choosing those that are short and strong; or of the young shoots in the early part of summer, set in to an inch from the top, and about a foot distance in some shady place.

368. *Sorrel* is an acid perennial plant, much relished by some as a sallad, often used as a pot herb, and some times as a medicinal one. The *round leaved* sort, commonly called the Roman, is reckoned the more grateful acid, and increases in

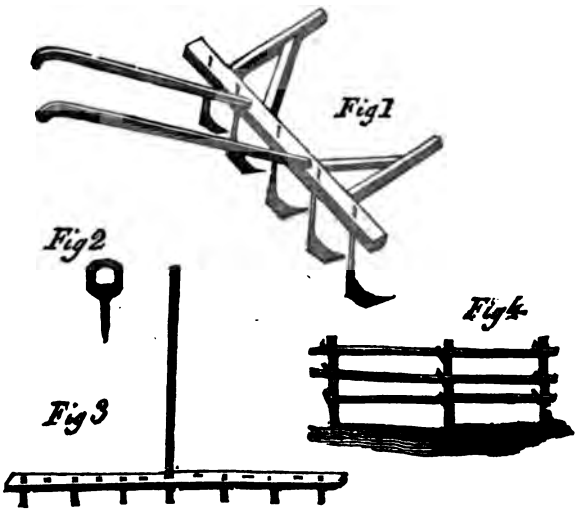
the ground a pace. Sorrel is generally propagated by parting its roots, either in spring or autumn, and if from seed, (which produces the finest plants,) it should be sown in March. The plants of the common sorrel should be six or eight inches asunder, and the other sort a foot or fifteen inches. Sorrel likes a cool, moist soil, but the *round a dry* one.

369. *Tansey* is a culinary and medicinal herb, of which, besides the common, there are curled leaved, and variegated sorts; but the former only is proper to be used medicinally.—It is perennial, and propagated by roots and slips, in spring or autumn, set at eighteen inches distance, in beds four feet and a half wide; and will grow in any soil or situation.

370. *Thyme* is a pot herb, of which, there are commonly cultivated a broad, and a narrow leaved sort, but the former mostly. There is a sort called *lemon thyme*, that is admired for its flavour, and another called *silver thyme*, which, with the striped, are considered rather an herb merely ornamental. It is best to raise the common sorts from seed, though root branches, on account of their trailing nature, may be usually had from old plants. Slips will grow if set in a light rich soil, in a shady situation. The plants should grow at six or eight inches distance. If propagated from seed, let it be sown in March; sow thin, and cover lightly, slips are best made in April. This herb makes a neat edging when planted close, but it is a great impoverisher of the ground.

371. *Wormwood* is a useful medicinal herb. Besides the common, there is the *Roman wormwood*, both efficacious; some preferring the one, some the other. They are commonly raised from slips and cuttings, in any of the summer months, or from seed sown in the spring.

372. Art. LXIX.—IMPLEMENTS, &c.



Art. L.

373. VEGETABLE CALENDAR FOR JANUARY.

PEAS.

374. In the beginning of this month, sow some of the early varieties, to succeed the same sorts sown in November and December. At the same time you may sow the marrowfat, which will succeed the early kinds, and will come in as the others go off. The dwarf marrowfat is also an excellent pea to sow at this season; those that require sticks should be planted in rows, five feet distant from each other, for the early kinds, three feet will be sufficient. Those that were sown in the former months, (that are now three inches or more, in height,) should be hoed on a fine day, when the ground is dry, and have some earth drawn up to their stems, which will strengthen and protect them from the frost and winds. At the same time, place a row of sticks in the middle of your

double rows, and a few shorter and stout ones on the outside of each row, to assist the peas in climbing to their main support. You must be governed as to the length of your sticks, by the description of your peas, and they should not only be sufficiently tall, but also branchy, and should be prepared fan fashion, that the branches may extend only along the rows.—Let them be frequently hoed and earthed up.

BEANS.

375. The windsor and the mazagon bean, are proper kinds to plant now. The rows should be three or four feet apart for the windsor, and about five or six inches apart in the rows; the mazagon should be two feet apart, and four inches in the rows. (See November.)

BEETS.

376. If you have a piece of ground that has been highly manured for some previous crop: it is much to be preferred, for should fresh manure be used, it is apt to divert the main root from its course, and instead of one fine root, you will generally have a large top, with numerous fingers. Now, the beauty of these roots consist in being long and straight; having but one large or main root, and free from latterals or fingers. The ground should be turned up a full spade deep, and if you can dig it two spades deep, why so much the better; then lay it off in beds, four feet wide, and sow the seeds in rows, twelve inches apart, from one to one and a half inches deep, and two inches from each other in the rows. When the plants are up strong, thin them to the distance of six or eight inches from each other in the rows. The best kind for the table, to be planted now, are the early blood turnip rooted, and the long blood beet. These seeds being large, may be planted with the hand dibble. (See Fig. 3, Art. 49.)

TURNIPS.

377. About the latter end of this month, sow a few early Dutch turnips—if they succeed, they will be fit to pull in April, and will be very good. (For directions, see paragraph 569, July.)

KOHL RABBI.

378. A few of these should be sown now, on beds prepared as for beets. (Paragraph 376.) The rows should be fourteen

to eighteen inches apart, and the plants thinned out early, to six inches in the rows; twelve inches would be preferable.—The plants thus thinned out, can be transplanted, as they take as readily as cabbage plants. Should severe weather set in, cover the plants with a little hay or straw.

CABBAGES.

379. Sow early york, sugar loaf, early London battersea, and early emperor; the last is seldom found in Carolina, or Georgia, as our seedsmen import but a few of the new varieties, owing to the little demand for them.

The early heart shaped and Wellington, are also fine kinds to sow at this season; but be sure that your seeds are *genuine*. Dig the ground a full spade deep, and throw it up into beds, four feet wide, draw four drills lengthwise on each bed, sow the seeds pretty thick, and rake the surface even. Now, you may the latter part of this month, transplant some of those sowed in September and October, but the next month is the proper time to put them out. Read article tenth first.

CAULIFLOWERS AND BROCOLI.

380. These must be protected from the severe weather which we generally have about this time. Bind moss or hay around them, beginning low down at the stalk, and cover about two thirds of the leaves, tieing the leaves together near the top, and then haul the earth well up to the stems. Hoe and take off all decayed leaves as they appear.

If you have any good plants, you may the middle of the month transplant them about two and a half feet apart, from row to row, and the same distance in the rows.

ONIONS AND ESCHALLOTS.

381. These (which were planted in October, November, and December,) will require to be freqently worked; but in hoeing them, be careful not to hoe deep, or raise the earth about the bulbs.

If you have not planted garlic and eschallots, do so at once.

SPINAGE.

382. Continue to sow spinage, but let it be genuine English seed, or they will run all to seed early in the spring. To have a succession, sow a small quantity every fortnight or three

weeks. The round leaved and the flanders, are the best to sow now; sow on beds four feet wide, making the drills one foot apart, covering about three quarters or an inch deep.

LETTUCE.

383. Sow these seeds in a sheltered spot. The royal cape head, and hardy green are very good kinds for this sowing.—Should very cold weather set in, throw a little loose hay over them. If you have any plants which stand too close on the beds sown last, draw them regularly and carefully, and transplant them about ten inches apart each way, in a warm border or bed, that has been well turned up with a spade.

CELERY.

384. Continue to earth up your cellery, but let this work be done only in dry weather, taking care to gather up all the leaves neatly, and do not bury the hearts of the plants.

ENDIVE.

385. Take advantage of a fine dry day, when the plants are quite dry, and tie up the leaves of each plant together; then draw up the earth around them separately, to protect them more effectually from frost, and to assist their blanching.

RADISHES.

386. Sow the early scarlet, short top, and scarlet turnip rooted; sow every fortnight. These may be sown between rows of other vegetables, as they come off early, and do not interfere with them; or you may sow a sprinkling of carrot seed with them, for, if the radishes should fail, the carrots may succeed, and if both succeed, there will be a double advantage—for when the radishes are drawn off, there remains a crop of carrots, which will come in at an early period; or instead of carrots, you may sow spinage, or lettuce seed, and these will come in after the radishes. Be careful to spread a little dry straw or litter over them, if severe weather should set in, and remove it in mild weather, and continue to do this until the plants are advanced in the rough leaf.

PARSLEY.

387. This is a very good time to sow parsley; sow the seed (which should be the curled variety,) in shallow drills, pretty

thick, and cover them about half an inch deep. This seed sometimes lies in the ground a month or six weeks, before it appears.

Parsley makes a pretty edging, sown in single drills, round the beds next the paths.

HORSE RADISH.

388. This vegetable is propagated by cuttings, either cut from the top an inch or two long, or from the old roots, cut in pieces of that length; but the top, or crown of the plant is most preferable. The ground should be well manured, and dug full two spades deep; plant your cuttings or sets in rows, two feet apart—and six or eight inches apart in the rows—sinking your sets with the crowns upright, about ten inches deep; this being done, level the surface of the bed, and keep it free from weeds, until the plants are full grown.

Some take them up the first year, but then the roots are slender, and never as fine as when left a second year. If in taking up the roots, some offsets be left, they will produce a successive supply for many years. You may sow a row of beets, spinage, or radishes, between each row of horse radish the first year.

ASPARAGUS.

389. If not done last month, let your asparagus beds be dressed as soon as possible in this.

Cover the beds with good old rotten manure, one or more inches deep, and fork it in carefully, that you do not injure the crowns of the roots. (See October, paragraph 620.)

ARTICHOKES.

390. Your artichokes should also have been attended to in October or November; if they have not, delay it no longer.—(For directions, see October, paragraph 619.)

CARROTS, PARSNIPS AND SALSAFY.

391. These should, if possible, be sowed on beds that have been manured for a former crop; as newly manured land will cause these roots, to make side roots or fingers, instead of one large, straight, and fine root.

Let the ground be dug a full spade deep, made fine, and laid off in beds four feet wide; draw four drills one foot apart, on each bed, sow the seed regularly, and not too thick.

Let the seed for this sowing be *imported European*—and sow only a little now for an early crop.

IRISH POTATOES.

392. If you have planted none yet, and wish early potatoes, in the beginning of this month you may with safety plant some.

393. Your ground should be well ploughed, or dug up, then laid off in rows three feet apart—making deep trenches.—Spread a large quantity of fresh manure, well mixed with partly decomposed straw or litter, and if you cannot procure these, half fill the trenches with old straw, or refuse hay, place the sets (each of which should have at least two eyes,) eight inches apart, on the straw or hay, in the centre of the trench; put a good handful of manure on each set, (but if you have any hog's hair, reserved for this purpose,) when you scalded your hogs, put as much as you can take up by a pinch of the thumb and fore finger, and place it on each set, and then cover about six inches deep with the earth, which was taken out of the trench, drawing the same up into a little ridge.—Potatoes usually lie in the ground a month or so, before they show themselves. Should they be caught by a frost, the tops only will be killed to the first joint, and will shoot again, unless any of the plants have formed tubers, when they will most likely, be entirely killed.

Haul the earth up to their stems, as they advance in growth, but do not (as is customary,) cover the plant entirely with the earth, if you wish an early crop.

HOT BEDS.

394. The latter end of this month, is the proper time to prepare your hot beds for sowing tomatoes, cucumbers, peppers, &c. (For directions, see Art. 2.)

ART. LI.

395. VEGETABLE CALENDAR FOR FEBRUARY.

PEAS.

396. *Should a successional crop of peas be required*, you may sow any of the early varieties, such as early frame, early Warwick, Charlton, &c. (For directions, see November, paragraph 630.)

397. Have such peas as are advanced in growth, frequently hoed, and the earth hauled up to ther stems; and as soon as they are six inches in height, stuck with suitable rods. The abundance of the crop, depends upon their being well and early stuck with good sticks. If you top the plants when they have five or six blossoms, you will have them in earlier.

BEANS.

398. Continue to plant beans for a successional crop, every fortnight or three weeks. (See January.)

POLE BEANS.

399. If you are desirous of having *very early beans* for market, you may (the latter end of this month,) plant a few in the *turnip cups*, (as directed in Art. 42, on early melons, &c.,) which must be protected in a frame or hot bed, to be planted out in the open ground, in mild weather, (in March or April,) with the cups entire; they will come into bearing a fortnight earlier than those which are planted in the open air. But you must always bear in mind, that beans are next to melons and cucumbers for tenderness, and that they are easily lost, if planted in the open ground too early.

IRISH POTATOES.

400. Plant a full crop of Irish potatoes as early in this month as convenient. (For directions, see January, paragraph 392.)

BEETS, CARROTS, SALSAFY AND PARSNIPS.

401. Sow full crops of these vegetables the latter end of this month. (For directions, see January.)

SPINAGE.

402. A successional crop of spinage may be now sown; the

round leaved is best, and if possible procure *European* seed, sow a little now, and then again in a fortnight. Spinage soon runs to seed at this season. (For directions to cultivate, see August, paragraph 581.)

RADISHES.

403. Sow every fortnight to keep up a regular supply; and thin the early crops as soon as they arrive to the size of a goose quill. (For sowing, read January, paragraph 386.)

LETTUCE.

404. Sow your lettuce seeds where they are to remain, for they are apt to run to seed early in the spring, especially those transplanted. The brown Dutch, and Silesia, are good kinds to sow at this time.

TURNIPS.

405. You may sow the early flat Dutch, the seed should be genuine European, and even then only a few should be sowed, as they soon become stringy and hot.

Sow in rows twelve to eighteen inches apart, and when in the rough leaf, thin out to six or eight inches apart.

CABBAGES.

406. Early in this month, transplant from the seed beds which were sown in October and November, the early york, sugar loaf, drumhead, and other cabbages; but be sure and read articles 8 and 47.

CURLED CRESS, MUSTARD, &c., FOR SALAD.

407. These may be sown once every ten or twelve days, to have a constant supply. Sow in drills a foot apart, scatter the seeds regularly, and not too thick.

TABLE MUSTARD.

408. The condiment called mustard, which is in daily use at our tables, is made from the seed of the black or brown mustard, which you may sow in this or the next month.—(See Art. 38, mustard.)

ARTICHOKES.

409. Now, early in this month, let your artichokes have a general dressing.

Squib directs, "that where the plants have been hauled up in the autumn, to protect them from frost, let the ground now be levelled down, especially if the plants have begun to shoot tolerably strong: observe as you proceed in levelling down, to dig and loosen all the earth about the plants; and at the same time, examine the number of shoots or suckers, proceeding from each stool or root: and selecting two or three of the strongest, to remain on every stool or root; you may then readily get to slip the superabundant shoots off clean, from the place whence they arise; minding as above directed, to leave two good shoots, but never more than three, upon each shoot or stock; closing again, and gently pressing the earth about the roots, and also about the young plants with your hands.

410. "The shoots that are slipped off, will serve to make fresh plantations, where wanted; for artichokes are generally increased, by planting the young shoots; and this is the season to do it. When any new plantations of artichokes are intended, let them be planted so soon in this month, as you can procure good plants for that purpose; observing that those slips or suckers, slipped off in spring dressing, from the largest plants, as above directed, are the proper sets to be chosen.

411. "There are two sorts of artichokes—the *large globe*, and the *French green* or *oval artichoke;* the former is greatly preferable to plant for a general supply, the head being considerably larger, and the eatable parts more thick and fleshy.

412. "They should be planted in an open situation, and in good ground; it may be necessary, therefore, to spread a quantity of good rotten dung over the piece, and to dig it in. The sets must be planted with a dibble, and seting stick, (see Art. 49, Fig. 2 and 3,) in rows of five feet apart, and four feet apart in the rows—give them some water immediately after they are planted, to settle the earth about the plants.

The above plantation, if kept clear from weeds, and watered now and then in dry weather, in the beginning of the spring, till they have taken good root, will not fail to yield artichokes in June.

413. "You may in the spring, when your artichokes are dressed, plant a row of drumhead cabbage plants between them, or sow radishes, spinage, and lettuce; as also between the rows of your new planted shoots.

414. "A plantation of artichokes, will continue to produce good heads six or seven years, and sometimes longer; but it

must be observed, that such persons as desire to have a succession of them, for two or three months in the summer, should make a new plantation every spring; for the old stocks, which have been planted a year or two, produce heads in May or June; and the slips planted now, produce their heads in June and July.

415. "About the latter end of this month, sow the seed of artichokes. For this purpose, choose a small piece of good ground, in an open situation; throw it up into a bed, about four feet wide; draw four drills thereon, about nine inches from each other, and half an inch deep; plant the seeds about six inches distant in the row; cover the seed over, and rake the other ground smooth. The plant from the seeds will be fit to put out in September."

DRESSING OLD ASPARAGUS BEDS AND PLANTING ASPARAGUS.

416. "About the beginning of this month, let your asparagus beds have their spring dressing.

417. "In the first place, let all the weeds, &c., be cleared away from the surface of the beds: and having provided yourself with a three tined fork, (*this fork should be about ten inches wide, and contain three tines, each about a foot in length, and an inch and a half broad; the back part perfectly flat, and the fore side convex, or a small rising in the middle of each tine.*—COMPILER.) "let them be forked up, and the surface laid smooth, and all the lumps of earth, if any, be beaten as fine as possible. If the land is stubborn, and will not rake just now, let it lie a few days and dry, and take the advantage of the first shower of rain, which will mellow the soil, so that the beds will rake free and easy; but before you have finished raking them, you may sow thereon some radish, spinage, or lettuce seed, which will not injure your asparagus in the least, provided, you do not sow the seeds too thick.

418. "At any time in this month, is a very proper time to remove the roots of asparagus, for the making of new plantations. In the doing of which, the chief matter to be regarded, is the choice of a proper soil, which should be the best, and the deepest the garden affords; it must not be too wet, nor too strong or stubborn; but such as is moderately light and pliable; so that it will readily fall to pieces in digging, raking, &c., and in a situation that is open, and enjoys the full sun.

"The ground where you intend to make new asparagus beds, should be regularly trenched, or dug to a good depth; and a large quantity of rotten dung buried in each trench, at least ten or twelve inches below the surface of the ground. The ground being dug and laid level, divide it into beds three feet in width, with alleys about twenty inches in width, between bed and bed. Two rows of these roots are to be planted on each bed, allowing about sixteen or eighteen inches between each plant, and let the rows be about eighteen inches from row to row.

"Next, let it be observed, that the plants to be chosen, must not be more than two years old; but most gardeners prefer those that are only one year from the seed, which are such as I would recommend; as from experience, I have found they have generally taken root more freely, and succeeded every way, better than two year old plants.

419. "The following is the method of planting them:—Strain your line lengthwise on the beds, about eight inches from the edge; and then, with a spade, cut out a small trench or drill, close to the line, about six inches deep; making that side next the line nearly upright; and when one trench is opened, plant that, before you open another, at the distance required as above. In placing the roots, observe they must not be horizontally extended, or put flat in the bottom of the trench, as practised by some people; but they must be laid nearly upright, against the back of the trench or drill, so that the crowns of the plants may also stand upright, about two or three inches below the surface of the ground. Let them be all placed at an equal depth, spreading their roots a little, in nearly a direct position, against the back of the trench; and, at the same time, drawing a little earth up against them with the hand, as you place them; just to fix the plants in their due position. When one drill is thus planted, immediately with the rake, draw the earth into the drill over the plants; and then open another drill, and proceed in the same method till the whole is planted. Then let the surface of the bed be raked smooth, and cleared from stones, &c.

420. "The asparagus being planted, the next care is, when the plants come up, which will be about the end of this month, or the beginning of the next, to keep them clear from weeds, which must be particularly attended to during the summer season.

421. "It will be two years, from the time of planting two

year old roots, before the asparagus will produce handsome buds, large enough for use; though sometimes a few of the largest are cut the second spring after planting. But I do advise to let it be a third year before you make a general cutting.

422. "A plantation of asparagus, if the beds are properly dressed every year, as directed in the spring and autumnal months, will continue to produce beds for twelve or fourteen years.

423. "In making new plantations of asparagus, it is the custom with some gardeners, instead of putting in your plants as before directed, to sow the seeds at once, in the beds where the plants are to remain. This is not a bad method; for, by such practice, the roots are not disturbed by a removal, and consequently, cannot fail of producing a regular crop. But it must be observed, that if two pieces of ground, are to be laid down the same year with asparagus—supposing one piece to be planted with young roots, and the other sown with seed, the piece which was *planted*, will be ready to cut a year before that sown with seed.

424. "However, to such as choose to raise a plantation of asparagus at once from seed, the method is this: The beds are to be three feet wide, and prepared as before directed for the plants; then mark out the lines lengthwise on the beds, and allowing these lines at the distance of sixteen or eighteen inches apart, dot in a few seeds, covering them about half an inch deep. When the plants have been up some time, you must thin them, leaving only one of the strongest in each place, and carefully cleaning them from weeds. Thus raised they will be fit to cut the fourth spring after sowing, but they will be very large and fine the fifth year."—*Squibb.*

RAISING ASPARAGUS PLANTS TO MAKE NEW PLANTATIONS THE NEXT SPRING.

425. "This is now the season to sow asparagus seed, to raise plants to make new plantations; sow about the middle of this month, on beds of rich earth about four feet wide.—Let it be sown in the broadcast, on the surface; and throw up the alleys about fourteen or sixteen inches wide, and three inches deep: let the seed be buried about half an inch deep in the earth, and let the ground be raked smooth—the plants will be up in a month, when they must be kept very clean from weeds, by a careful hand, weeding them at different times in the summer.

"If the weather be very dry when the plants come up, it will be proper to refresh them now and then, with a little water; which will greatly forward them in their growth.—They will be fit to plant out for good next spring."

SWISS CHARD.

426. About the middle of this month you may plant the seed of Swiss chard; for directions, &c., see paragraph 592.

RHUBARB.

427. Prepare your beds as you would for asparagus, and plant as directed in Art. 40.

SEA KALE.

428. Sow and manage as you would asparagus.

MUSHROOMS.

429. The latter part of this month, or early in the next, make mushroom beds; for directions, read Art 45.

HERBS.

430. At the latter end of this month, the seeds of most herbs may be sown; the ground should be well dug, and made fine, and these seeds merely brushed in.

This is also the proper season to plant slips of different herbs. (Read Art. 48, on *herbs.*)

MUTTON CORN.

431. Towards the middle, or last of this month, you may try some of the early six weeks, and sugar corn, and if you plant the Carolina flint at the same time, it will succeed the early kinds.

EARLY MELONS, CUCUMBERS, &c.

432. Now make arrangements for having these *early in market*, and follow the directions given in Art. 42.

TOMATOES, PEPPERS, GUINEA SQUASHES, &c.

433. Plant the seeds of these at any time in this month, in the *hot bed*, but if desired very early, put them in about the beginning of the month. (For making and managing the hot bed, read Art. 2.)

ONIONS AND LEEKS.

434. Sow onions and leeks in rows, ten inches apart from each other, on beds four feet wide.

Transplanted onions should be kept clean, and hoed often, which will greatly forward them, but observe that in hoeing, you *do not let the earth rise about the bulbs.*

SWEET POTATOES.

435. For an early market crop, plant in hot bed, as directed in Art. 31.

Art. LII.

436. VEGETABLE CALENDAR FOR MARCH.

TOMATOES.

437. The plants in your hot bed, (if you sowed any early last month,) will be fit to plant out the middle of this—provided, the weather is suitable. They should be put out in rows, four feet apart, and two feet in the rows, and as they advance in their growth, haul the earth up well to their stems.

As soon as they are about a foot high, you must have them stuck with strong bushy sticks, to support them and keep them off the ground. An excellent plan is to provide yourself with a number of stakes, about five feet long, having branches (which must be shortened to within two inches of the body,) at twelve or eighteen inches apart, from the top to within a foot of the bottom of the stake; these stakes drive down, at four feet apart, on both sides of the rows of plants, then procure a number of poles, and let them rest on these little branches, and running from one stake to the other, all along the rows, this will give you a little trellis, on both sides of the rows of tomatoes, and preserve them from falling about irregularly on the ground, and consequently rotting most of the fruit. (See Fig. 4, Art. 49.)

438. Sow a full crop early in this month, on a bed or border, well sheltered from the North and other cold winds, and open to the South or sun side, let the seed be sown in drills, eight inches apart, and transplant when about three inches in height.

PEPPERS.

439. If you have any of these plants in your hot bed, let them be put out as soon as they are large enough; you may put them in rows two feet apart, and one and a half feet in the rows.

440. Sow all kinds of peppers the middle, or latter end of this month; the sweet bell pepper, tomatoe pepper, long finger, cayenne, and bird's eye peppers, are the proper kinds for the Charleston market; the two first, cut small and seasoned with salt and vinegar, make an excellent salad, and are also the best kind for pickling. The bird's eye is the best to make pepper vinegar of.

CUCUMBERS.

441. If you planted any in the hot bed or turnip cups, in the last month, they will be fit to put out the latter end of this, but if the weather is raw, keep them still in the beds until April, and when you transplant from the hot bed, take up as much earth as will adhere to their roots, and put them out immediately after a rain. If the weather is favourable, you may gather cucumbers in May.

442. As soon as the leading shoots appear, pinch them off; as the fruit is produced on the *latteral* shoots only, and which will immediately put out on the removal of the leading one. By doing this, your plants will bear fruit much earlier, than when the leading shoot is left.

443. Sow now, in the open air, a full crop of cucumbers; have the hills manured with old and well rotted manure; and let them be put four feet by five apart.

The early frame, green cluster, long prickly, and long Turkey, are very good kinds.

SQUASHES.

444. The bush squash is now most generally planted, let them be put on ridges, three to four feet apart, and the plants from twelve to eighteen inches apart on the ridge.

CUSHAWS AND PUMPKINS.

445. These may be planted in hills, ten feet apart, and one plant left in a hill; they require to be well manured, or will yield only a few small ones; but if planted in well manured, or very rich land, will produce very abundantly.

Some persons plant them here and there, in the corn field.

WATER MELONS.

446. Now, the middle or latter end of this month, (provided, the weather is settled, and there is every probability it will continue warm, but not unless,) you may set out the melons, with the turnip cups, that were planted last month; but I would much prefer waiting until the next month, when the risk is not so great. Let your ground be prepared as directed in Art. 43, parag. 325, and in putting out the cups, or the plants from the hot bed, follow the directions in Art. 42, parag. 319.

447. This is now the proper time to sow melon seeds in the open ground, they do well when planted with some other crop —such as cotton, corn, tomatoes, and sweet potatoes, which serve as a protection and shelter from the hot suns in July and August.

MUSK MELONS.

448. The directions for raising cucumbers, apply equally well to the musk melon. (See paragraph 441.)

OKRA.

449. In warm, settled weather, in this month, sow these seeds on beds or ridges, three feet apart, and put three or four seeds, eighteen inches apart, on the top of these beds: thinning them out to single plants when advanced in growth. For an early crop, the spot should be high, and the soil warm. (For a later crop, see next month, paragraph 492.)

GUINEA SQUASH.

450. The proper name of this vegetable is the *blue egg plant.* If you sowed any in a hot bed last month, you may the latter end of this month, or the first of April, plant them out where they are to remain.

451. You may now sow in a sheltered spot, the seeds of this plant; sow in drills six inches apart, a half ounce of good seed will give you 2000 plants if well managed.

BEETS.

452. Neglect not to thin the beets which were planted last month; leave the plants twelve inches apart in the rows, and keep the earth well hoed and loose.

Continue to plant beet seed for a successional crop; the early blood turnip, and the early long blood for table use, and for cows or stock, plant the sugar beet.

SUGAR BEET.

453. This is an excellent food for your milch cows; they may be planted at any time in this month; let your ground be well ploughed, or dug up and levelled, then draw up little ridges as you would for ruta bagas, and dibble in twelve or fourteen inches apart, two seeds in a hole, and when advanced in growth, thin them out to single plants; and if properly hoed and attended to, they will be fit for use in June. Cut them into small pieces, and boil as you would the ruta baga, and when cold give the cow.

CARROTS.

454. Continue to sow carrots, for a summer and fall crop, but they must be imported seeds from Europe, and of the *real orange*, or they will every one run to seed in the fall; a few of the European may run, but *very few*, (comparatively speaking,) and these should be immediately pulled up. (See directions for sowing carrots, January, paragraph 391.)

CABBAGES.

455. If you have plants of the early kinds, put them out at once, and give the ground as much manure as you can spare. (For full directions, read Article 47, on the culture of spring cabbages.)

The cut worm is the greatest enemy of young plants at this season, and nearly every gardener has some plan of his own, for saving his plants from this worm, and one I know of particularly, that is quite successful, by wrapping paper around the stems, as high up as the second or third leaf; but this is too troublesome to do with many plants, and I would recommend to those who find the worm cutting their plants, to proceed early in the morning with a small pointed stick, and search them out; (they will generally be found an inch or so under the earth, near the plant that has been cut; their holes can be easily distinguished;) destroy them, or collect and give them to your ducks and chickens.

456. The green worm and cabbage lice, must be guarded against as directed in Art. 47, paragraph 355; but there are few of the cabbage tribe, if any (except the green glazed,) that form good solid heads in the summer; they are generally eat up so much, as to resemble honey comb, more than cabbages.

457. This is a good time to sow the green glazed, and if

you have seed of your own raising, or of another's, raised in the neighborhood, they are the best.

CAULIFLOWERS.

458. Set out the early kinds if you have any plants, but they will rarely repay the trouble.

The next month is a good time to sow for a fall crop.

TURNIPS.

459. The early Dutch is the proper kind, if you sow any at this time, but it is doubtful if they come to much. Those sown last month should be often hoed, and as soon as large enough, thinned out, leaving the strongest plants from six to eight inches apart in the rows.

ONIONS AND LEEKS.

460. If you neglected sowing onions and leeks the last month, do so early in this; and as soon as they are well up, hoe them and keep the ground loose, and free of weeds or grass.

NEW ZEALAND SPINAGE.

461. Plant three or four seeds in hills, about three feet apart, have the ground well manured, and a few hills will supply a large family.

It is a vine, the large leaves of which only are used, and it will stand the greatest heat of our climate, and will not (like the old varieties,) run to seed.

BEANS,

462. You may continue to plant the windsor and long pod, in rows three feet apart, and four or five inches in the rows.

SNAP BEANS AND POLE OR RUNNING BEANS.

463. Plant now full crops of the bush bean, in rows two feet apart, leaving the plants four inches apart in the rows.—The running bean should be planted in hills four feet apart, or between corn, but an excellent plan is recommended in Art. 44, which see.

464. The large Lima, and Carolina, or Cievie, are very good kinds; one quart of the large beans will plant one hundred hills, but do not plant till the ground is warm. If you planted any in pots, or turnip cups last month, and the weather is

settled warm, about the middle or latter end, you may put them out, as recommended in Art. 42, paragraph 322; but let me again repeat, that beans are next to cucumbers and melons for tenderness.

IRISH POTATOES.

465. If not yet planted, delay doing so no longer. (For directions, see January, paragraph 393.)

Those that were planted early in January, and early last month, if forward, may be hoed and hauled up to; this will protect them from the frost and cold winds, and greatly promote their growth.

RADISHES.

466. Sow every ten or twelve days, to have a regular supply, some of the short top and salmon radishes. (See January, paragraph 386.)

LETTUCES.

467. Now thin out such as require it, and those you take up, may be put out on the edges of the beds, or borders of the garden, about twelve inches apart, and if the weather be dry, give a little water.

468. Should you sow any now, let it be on a low, cool, and well drained spot, and where they are to remain until used, for it will not do to transplant them at this season.

CORN.

469. Plant the early sugar, and Carolina flint corn at the same time, to be used in mutton; the latter will succeed the former, and keep up a regular supply.

PEAS

470. Sow the warwick, early frame, and Charlton, if a successional crop be desired. (See November.)

CELERY.

471. Sow for a first crop the middle of this month—they like a shady, cool spot, but not under trees. Sow the seed pretty thick, in little drills six inches apart, cover lightly, and in dry weather give moderate waterings, before and after the seed comes up. A half ounce of seed will give 5,000 plants.

ASPARAGUS.

472. If not forked and dressed last month, let it be done immediately, as the buds are now quite forward.

ARTICHOKES.

473. Should they not have been attended to last month, delay it not a day longer. (For directions, see February.)

Artichokes if planted out early this month, will yet succeed, and perhaps bear in the summer.

HERBS.

474. Sow the different herbs as recommended in Art. 48, and it is also the proper season to divide, and plant out the roots.

CURLED TANSEY.

475. Sow at any time in this month, it makes a pretty edging to a border or bed, sown in single drills. (See January.)

WHITE MUSTARD, CRESSES, &c.

476. Draw flat drills, and sow each kind separately, one foot apart; if the weather be dry give a little water.

BLACK OR BROWN MUSTARD FOR TABLE USE.

477. If you sowed none last month, do it at once. (Read Article 38.)

SWEET POTATOES.

478. Plant a full crop; for directions read Article 28.—Transplant the shoots from the hot bed as soon as fit to put out; but perhaps it would be better to defer putting them out until April.

SWEET FENNEL.

479. Sow a little of this seed on a small spot any where, and it will stand there for ages; it is used in fish sauces.

NASTURTIAM.

480. These may be sowed in drills, putting the seed three or four inches apart, and cover an inch deep; as soon as they are six inches high, give rods for them to run up on, as you would peas. It is often cultivated for its beautiful orange flowers, but generally for its excellencies in sallads. The

berries when pickled green, are very good, and with melted butter, are an excellent substitute for capers—to be eat with boiled mutton.

SORREL.

481. Sow in drills around the edge of the beds, or borders of the garden; keep clean from weeds until advanced in growth, when they should be thinned out one foot apart. The broad leaved English, and round leaved French, are the best kinds.

TANYAH.

482. This fine vegetable is seldom grown on our farms and gardens. It may be propagated in any well drained low spot, from eyes or buds, as you would the potatoe, and like the sweet potatoe, the small ones are generally saved for that purpose.

There are two kinds, the pink and the blue, both very good; but some persons prefer the blue, and think them the most farinaceous; while others insist, that the pink is undoubtedly the finest vegetable.

It will keep longer than the sweet or Irish potatoe.

MANGOES.

483. "This delightful vegetable grows on vines, which run to great length, and bear profusely, late in the fall. In shape it bears a strong resemblance to a pear, is either green or white, and in flavour resembles a squash, and is cooked in all the modes in which that vegetable is. In planting them, if they have long shoots, take care to prune the vine down to a couple of eyes when you put them into the ground. As soon as you can safely venture, have a hole dug, into which empty a wheel barrow of good well rotted manure, and let it be well mixed with the earth. In each of these holes, (which should not be nearer than ten feet,) plant one mangoe, cover it about three inches deep, and it will soon shoot up one or two vines, and commence growing rapidly.

484. "It will be necessary to provide a trellis or arbor to run on, (the arbor is preferable,) and it forms a beautiful and dense shade; it answers well for this purpose. It can also be trained to lattice work, fixed to a piazza. But wherever it is trained, it must have a good deal of space allowed it, as one plant will cover from fifteen to twenty feet square in the course of the season; and so vigorous is its growth, that it

requires no care during the summer, except to keep the weeds from it. In September and October it will begin to bear, and in October be in full bearing, when may be had, as fine a vegetable as is grown."

Art. LIII.

485. VEGETABLE CALENDAR FOR APRIL.

REMARKS.

486. Whatever has been omitted to be done in the last month, should be done as soon as possible in this. Keep the garden clean, and do not allow weeds or grass to be seen; it will require but little labour to destroy them when young; but if permitted to grow large, they not only take up much more time, but are a great injury to your crops. In fact there is no work that requires *earlier* and *more constant attendance* than this.

CABBAGES.

487. The green glazed is the only kind that is fit to plant out at this season, in our low country. If you have plants, give them a low well drained, and very rich spot, well dug with the spade, and put them out in rows three feet apart, by two and a half feet in the rows.

488. This is a good time to sow late battersea, sugar loaf, curled savoys, drumhead, flat Dutch, and green glazed cabbages, for fall and winter use; and may be seeds of your own growth, or from the Philadelphia and Northern seed growers.

RED PICKLING CABBAGE.

489. At any time in this month, you may sow the red cabbage, for pickling or cutting up into salads—cultivate as you would any other kind of cabbages.

CAULIFLOWERS AND BROCOLI.

490. Sow a full crop about the middle of this month, and if they pass through the summer, they will give you fine

flowers. They will always command a ready sale in the Charleston market, and at prices that well repay the trouble and attention they require.

TOMATOES.

491. Sow largely of tomatoes in this month, and as soon as the plants are fit, put them out. (For directions, see March, paragraph 437.)

OKRA.

492. Now sow a full crop early in this month. It delights in a low rich spot, well drained, that no water may lie about the plants. Throw it up into ridges or beds, four feet apart, and drop five or six seeds in holes made by a chop of the hoe, about three feet apart on the ridges.

493. When about four inches in height, thin them out to single plants, leaving the strongest and most healthy, and keep the earth loose, and hauled up to their stems. The long white is most esteemed.

PEPPERS.

494. Plant out all your plants early in this month, if you neglected it the last month.

If you wish to sow more seed, do so the first week in this month.

SNAP BEANS.

495. Continue to plant these every two weeks. (For directions, see March, paragraph 463.) Keep the ground well hoed, and hauled up to the stems of those advanced in growth.

You may plant all the different varieties in this month.—The early dwarf China, early Mohawk, early dun coloured or quaker, white Carolina cutlass, and royal dwarf French, are very suitable.

One quart of beans will plant two hundred and thirty to two hundred and fifty feet of row, allowing the smallest to be put two inches, and the largest four inches apart in the trench.

The white running snap bean is much esteemed also.

POLE BEANS.

496. Plant the Lima and cievie four feet apart each way.—(See March, paragraph 463.)

BEETS.

497. Plant beet seed the early part of this month. The seeds from plants raised in our low country, near the sea board, is the best to plant now; they are more capable of standing the heat, than Northern or English beet seed.

Keep your young beets well hoed, and as soon as they are large enough, thin out to the proper distance, (say twelve inches apart,) leaving the strongest and largest plants.

In hoeing beets, let the hoe loosen the earth well between the plants in the row.

CARROTS, PARSNIPS AND SALSAFY.

498. If the main crops of these were not sown in the last month, do it early in this.

Remember to keep the beds perfectly clean, and as they advance in growth, to thin them to the proper distance—say seven to eight inches.

If you sow the beginning, and again the latter end of this month, and your seed be the genuine *orange carrot*, they will not run to seed in the fall, but continue the winter through to furnish you with fine roots for the table or market.

ONIONS.

499. Keep your sets or transplanted onions, free of weeds, and the ground loose, (but on no account raise the earth about the bulbs, or haul it to the stems,) and it will greatly promote their growth.

Those sown in February, should be thinned out and kept well hoed and clean.

LEEKS.

500. The latter end of this month, sow the *large flag leek*, sow the seed in drills, pretty thick, and as soon as large enough, transplant them to where they are to remain for use in winter.

MELONS, CUCUMBERS, AND SQUASHES.

501. You may continue to plant these seeds, but do it as soon as possible. (See March, paragraph 441.)

GUINEA SQUASH.

502. Transplant these into beds well manured, giving them a plenty of water, that they may take readily, put them in rows four feet apart, and the plants two feet in the rows.

MANGOES.

503. If you did not plant your mangoes in the last month, delay it no longer; but put them out as directed in parag. 483.

RADISHES.

504. Sow every three weeks, if you wish a succession.

LETTUCE.

505. These sow in a cool spot, well drained if low, and when fit, thin them out ten inches apart. They should remain where sown, as when transplanted at this season they are apt to run to seed.

CELERY.

506. Celery likes a cool, low, and damp spot, but not wet. (See directions in March, paragraph 471.)

As soon as the plants are large enough to handle, let them be pricked out, into beds well dug and made fine, setting the plants about four inches each way; this will give them good roots, and they will take readily, when transplanted where they are to remain. If left in the seed bed, they are apt to get stunted.

CITRON MELONS FOR PRESERVES.

507. About the fifteenth of this month is a good time to plant this seed; manage as you would the water melon.

GHERKINS FOR PICKLES.

508. The fifteenth is the right time to plant gherkins; they should be cultivated as you would cucumbers; they are great bearers, and a few vines on a good piece of ground, will give you hundreds.

SWEET POTATOES.

509. Plant a full crop early in this month, if you did not do so in the last.

TANYAHS.

510. If you neglected planting tanyahs last month, delay it no longer, but do it at once.

BALSAM APPLE.

511. There are two kinds, the large and the small:—The

large balsam apple is a great runner, and will cover a trellis twelve or fifteen feet high. It requires some assistance in trailing with strings.

512. The seed should be planted about the middle of this month, where they are to remain, as they do not bear well being transplanted; put four or five seeds in a chop, and when large enough thin out to two. The apples are sometimes twelve and fifteen inches in length, of a rich orange colour, and on an arbor or trellis, present a beautiful appearance.

They are used in making pickles, and for this purpose, must be picked when from two to four inches in length; the smaller kind is preferred as a vulnerary; when perfectly ripe, take out the seeds, cut the fruit in strips, put them into a bottle, and fill it up with old rum.

513. They may be grown in a bottle, by inserting them in it when young, tying the bottle by the neck to the trellis, that the fruit may hang loosely in the inside, and when large enough, cut off the stem; it thus presents a singular appearance.

Art. LIV.

514. VEGETABLE CALENDAR FOR MAY.

SNAP BEANS.

515. Continue to sow every ten days for a regular supply of young beans. (See former months, paragraph 463, 495.)

CABBAGES.

516. Sow cabbage seed for fall and winter use. (Seeds of your own growth, are the best to sow now.) The green glazed is the only kind that is worth *transplanting* at this time, the others are so eat up by the cabbage worm, as to resemble honey combs rather than cabbages.

517. The seeds you sow now should be put on moderately poor ground, and let them remain in the seed bed until August, when they should be transplanted to a very rich spot. All seeds sown in this month, should have moderate waterings, until they come up, as they are apt to be lost from the hot suns, before they appear above ground.

518. This is a favorite month with most gardeners to sow their fall and winter cabbage seed, as they find it difficult to get the seed up next month, owing to the hot suns and heavy rains.

SCOTCH KALE.

519. Sow, transplant, and treat as you would winter cabbages.

CAULIFLOWERS AND BROCOLI.

520. The middle of this month, is an excellent time to sow a full crop of these seeds, to be transplanted in July, which see.

CELERY.

521. Continue to sow celery if required. (See April, paragraph 506.)

RADISHES.

522. Sow every fortnight for a succession. (See January.)

TOMATOES AND PEPPERS.

523. Transplanted as soon as fit to put out. (For directions, see March.)

ONIONS.

524. Should any be running to seed, twist the neck down, and with the foot, press lightly on it, so that the leaves will lie flat on the earth; this will prevent their running to neck instead of bulk—the tops of the seed-stalks should always be broken off.

BEETS, CARROTS, PARSNIPS AND SALSAFY.

525. You may sow these seeds if you have not yet done so—but there is little now to be expected from these. (For directions, see April.)

CUCUMBERS, MELONS, SQUASHES, &c.

526. If desired, plant more of these, but do it early in the month. (See March.)

GATHER HERBS FOR DRYING.

527. As soon as the plants are at their full growth, you may

gather balm, sage, thyme, &c., &c. They must be gathered on a dry day, and spread in a room or under a shed to dry; but do not let the sun get at them, as that would exhaust them too much, and render them useless.

528. They should always be dried gently in the shade.

PLANTS FOR DISTILLING.

529. Should be cut when at full growth, and beginning to flower, and always cut on a dry day.

Art. LV.

530. VEGETABLE CALENDAR FOR JUNE.

CABBAGES.

531. Sow a full crop of green glazed, sugar loaf, drum head, battersea, and savoys, in fact any of the varieties may now be sown for the fall and winter use.

532. The beds should be well protected from the hot suns, by having bushes stuck up between the rows, or by slight scaffoldings made with bushes, raised about three feet above the bed, to allow a free circulation of air about the plants.—Water often, until the plants are well up, and if the weather is dry, continue the supply of water. The beds to be sown at this season, should be of good soil, have it well dug up with the spade, but give it no manure.

CAULIFLOWERS AND BROCOLI.

533. If you neglected to sow these seeds last month, do so immediately; sow and tend as you would cabbages.

CARROTS.

534. You may sow a few of these if wanted. (See January.)

TOMATOES.

535. Sow a full crop to have a succession, these will continue bearing fruit until killed by frost.

OKRA.

536. Plant now for a fall crop, to succeed the former plantings, which will be exhausted by that time.

RADISHES.

537. Sow a successional crop every fortnight. (See January.)

CELERY.

538. You may now transplant such celery plants as are fit to, where they are to remain, which should be a low, rich spot, well drained.

539. Dig it up with the spade, and let the earth be well broken, and made fine; trench it a foot deep, at the distance of four feet apart, and fill the trenches half full of good rotten manure, which should be at least a year old, turning it in well with a spade, rake it level and even, and then place your plants about nine inches apart in the trenches.

540. As the plants advance in growth, choose a dry day, and haul a little earth up to them, and continue to do this every two weeks until *the fall*, taking care not to allow the earth to fall in between the leaves, always pressing the leaves together as close as possible, leaving only the upper part of the leaves exposed, and the top bud. The leaf stalks should always be kept covered with earth, in order that they may also be blanched.

541. As soon as your plants in the seed bed are advanced enough, prick them out into good soil four inches apart.

SNAP BEANS.

542. Continue to plant snap beans. Let the seed steep in water six or eight hours before planting.

LEEKS.

543. Transplant such leeks from the seed bed as are fit to put out. The ground should be well manured, and turned up with the spade; mark out the rows nine inches apart, and at every six inches in the rows, make a hole with the dibble, into which set a plant, and be sure that you press the earth to the roots only, and not to the plant; leave the plant standing in the centre of the hole.

Leeks may be put out round the borders of the beds in the garden.

PULL ONIONS, GARLICK, AND ESCHALLOTS.

544. When the leaves of onions begin to wither, it is then the proper time to take them up. They should be taken up in dry weather, and as they are taken up, pull off their leaves,

leaving about four or five inches of the stalk to each bulb; spread them upon a clean dry spot to harden, or upon a scaffold made for the purpose. Let them lie for ten or twelve days, turning them often, that they may dry and harden regularly.

545. Gather them up on a dry day, clean them from earth, and all outer loose skins, and then remove to the house and spread on the floor.

Let the windows be kept open in dry weather, and turn them often, picking out all the decayed ones.

546. They should not be kept in a warm place, as they will *heat* and *sprout;* the best way is, after they have been spread in a dry cool and airy place for some days, tie them up in ropes, that is, round sticks or straight straw, with twine or matting, and hang them up until wanted for use.

To grow the seed, you must choose the finest bulbs, which plant out when you plant out your crop in the fall, (but many wait until the spring,) they should be put in good rich earth, and far away from any of its species.

547. When the seed is ripe, cut off the heads, and collect them so as not to scatter the seed; lay them on cloths in the sun, till quite dry, winnow and put them away in good brown paper bags.

548. As regards the eschalots, a portion should be kept to plant out in September or October.

CUCUMBERS AND MELONS.

549. You may plant these seeds for a late crop if desired, but the sooner they are in, the better.

GHERKINS AND CITRON MELONS.

550. The former for pickles; the latter for preserves, may be planted now, but put them in at once; for directions, read cucumbers, paragraph 442, the culture is the same.

SLIPS OR VINES OF THE SWEET POTATOE.

551. These are produced by sets, or small potatoes, which should have been planted in March, (as directed in paragraph 478.) If the season has been favorable, the vines will by the first of the month, have extended themselves across the alleys to the next beds; slip or cut them off within six inches of the top of the bed, where the sets or small potatoes lie planted, taking advantage of the first good rain, (after your land is

prepared,) when the earth is well soaked to do this, and immediately proceed and plant out, as directed in Article 29, paragraph 250.

RUTA BAGAS.

552. Read Article 22, on this turnip; paragraph 203.

ART. LVI.

553. VEGETABLE CALENDAR FOR JULY.

CABBAGES.

554. You may continue sowing these if required, but they must be protected from the hot suns, and heavy rains which fall in this month. (For directions, read June, parag. 532.)

CAULIFLOWERS AND BROCOLI.

555. Transplant your cauliflowers and brocoli, that are fit to put out from the seed beds, which were sown in April and May. Choose a rich piece of ground, and let it be well ploughed or turned up with the spade, made very fine and mellow, and lay it off in trenches four and a half feet apart, and about ten inches deep; into these trenches, spread a quantity of old well rotted manure, and let it be well dug in with the spade, and incorporated with the earth in the trenches, then upon this, at the distance of four feet, put out your plants, (pressing the earth well to the *roots*, and not to the *stem*,) and as they advance in growth, haul the earth well up to their stems. Continue to do this, as the plants advance in growth, and require support, and by winter, they will appear as if they had been planted on high ridges or beds.

556. Should the weather prove dry after planting, give a little water every evening, until the plants have taken good root. The evening is the best time to plant out, and if you can stick up a small bush or screen on the south side, to protect them from the hot suns, it will be of great advantage.—*Take care* that no water can lie in the trenches after a rain, but that it can run off easily, or the plants will be very much injured by it.

Cauliflowers do much better near the salt water; brocoli will do very well a few miles off.

WATER MELONS.

557. You may succeed in having a good crop of late melons, from seed sown early in this month; but they are liable to be killed by the hot suns and heavy rains; should they survive these, your melons will be fine though late. Plant the black Spanish if you can procure the seed.

TOMATOES.

558. If your plants from seed sown last month are fit, you may put them out, and as soon as they take root, give them good sticks, or a trellis made as directed in paragraph 437.

They should be put in rows four feet apart, and about two feet in the rows.

SNAP BEANS.

559. Continue to plant for a successional crop.

LEEKS.

560. If you have plants, put them out as directed in the last month.

CELERY.

561. Continue to transplant celery; for directions, see the last month, paragraph 538.

SPINAGE.

562. Towards the last of the month, you may sow some of the round spinage, it will be fit to pick in the fall, if it is not destroyed by the worms. (See August, paragraph 581.)

RADISHES.

563. If you intend sowing any spinage, you may mix a little radish seed with it, as the latter will come off in time to give room, before the former requires it. In dry weather, give water before and after they are up; and this should be done always at sun set.

LETTUCE.

564. You may sow lettuce seeds at any time in this month; but it is very doubtful if they ever arrive at perfec-

tion. The beds should be well raised, so that no water can be about them. The heavy rains and hot suns, cripple the plants very much at this season.

ENDIVE.

565. Sow as you would lettuce.

CURLED CRESS, WHITE MUSTARD, AND SMALL SALADING.

566. To have a constant supply, sow every ten days, in shallow drills eight or ten inches apart, and cover lightly.

CARROTS, PARSNIPS, BEETS AND SALSAFY.

567. If these can be protected, (see Art. 3,) you may sow some, but the heavy rains and hot suns, are very apt to destroy them whilst young.

IRISH POTATOES.

568. If you wish a second crop of these, you may plant sets from the last crop, but old potatoes are much to be preferred; do not dig them until the tops or vines are killed by a frost. (For directions to plant, see January, paragraph 393.)

TURNIPS.

569. The early Dutch and early garden stone, are the best kinds to sow for a first crop. These should be sown on a light soil, dig the ground well, or plough and harrow it, lay it off in beds three or four feet wide, with good bold alleys, making the beds higher in the middle than the sides, and giving them a good slope, that the water may not lie on them; draw drills twelve or fourteen inches apart, and sow the seed regularly. They are very liable to rot by the time they attain the size of a dollar, in consequence of the hot suns and heavy rains. A half ounce of seed will sow a bed four feet wide, and twenty-four feet long.

RUTA BAGAS, OR YELLOW SWEDISH TURNIP.

570. At the same time you may sow some of this seed.—(For directions, read Art. 22, paragraph 203.)

SLIPS OR VINES OF THE SWEET POTATOE.

571. If you have not yet planted these out, do it immediately. (See June, paragraph 551.)

ART. LVII.

572. VEGETABLE CALENDAR FOR AUGUST.

CAULIFLOWERS AND BROCOLI.

573. Put out all the plants you may now have, that are of a good size, as directed in July, paragraph 555.

CABBAGES.

574. Transplant all the plants of the different kinds of cabbage. Those that were sown in June, must be now fit to put out; place the sugar loaves, early york, and the smaller kinds, in rows two and a half feet apart, and about two feet in the rows—the larger kinds, as the drumhead, savoys, &c., require the rows to be about three feet, and the plants two and a half feet apart.

575. You may now sow the early kinds of cabbage, for use in November and December; but protect the seed beds from the hot suns and heavy rains.

If you wish to have early spring cabbages, sow *European seed*, to be transplanted in November.

CARROTS, SALSAFY, BEETS AND PARSNIPS.

576. Sow these seeds at any time in this month, but they should have some protection afforded them; they will amply repay for the time spent, in making the requisite coverings to protect them from the hot suns and heavy rains.

577. Bushes stuck in between the rows, and reclining a little to one side, or raised on crutches about four feet from the bed, and open on all sides, to allow a free circulation of air, will answer the purpose very well.

If your seed is genuine European, they will be fit for use all winter, and until late in spring.

CELERY.

578. Continue to transplant celery where you desire it, and have plants fit to put out. (See June, paragraph 539.)

TURNIPS.

579. Early in this month, you may sow full crops of all the different kinds of turnips. The most preferable for the Charleston market, and consequently most saleable, are the

early Dutch, early white stone, and early red top, generally used in soups; and the Norfolk, Hanover or tankard, yellow Aberdeen, and ruta baga, for mashing and serving up with melted butter, salt and pepper, or cayenne.

For directions to cultivate the turnip, read July, paragraph 569, and to cultivate the ruta baga or Swedish turnip, Art. 22, paragraph 203.

KOHL RABBI.

580. These may be sown at the same time, and treated in every respect as the ruta baga.

SPINAGE.

581. Sow a full crop of the round seeded spinage, at any time in this month, to come in for use in the fall. Dig the ground well, turning it up a full spade deep; lay it off in beds four feet wide, and draw drills about one foot apart.

The leaves of spinage, are liable to be eat up by worms at this season.

LETTUCE.

582. Sow in moderately low land, (for an early crop,) any time in this month. The early cabbage, grand admiral, and royal cape head, are much esteemed.

RADISHES.

583. Sow the short top, and turnip radishes, every fortnight to have a regular supply; water often, before and after they come up, if the weather is dry.

ONIONS.

584. Sow onions towards the latter end of this month, sow them thick in drills about one foot apart; those are to be transplanted in October and November, where they are to remain till full grown. (See next month, paragraph 612.)

SNAP BEANS.

585. Continue to plant snap beans, they will come in at a good time to pickle.

Hoe your beans which were planted in former months, and haul the earth up well to their stems; this you should do often, as it greatly promotes their growth.

ENDIVE.

586. If you sowed any endive in the last month, they will be fit to put out some time this.

Transplant them in rows, twelve inches apart, and ten or twelve inches in the rows.

You may sow more endive in this month if desired.

ART. LVIII.

587. VEGETABLE CALENDAR FOR SEPTEMBER.

TURNIPS.

588. Now sow full crops of all kinds of turnips, as the weather is much cooler and moister, than July or August, there is a greater likelihood of your succeeding now, than when sown in these months. (For directions, see the last month, paragraph 579.)

RUTA BAGAS.

589. If you have not yet sown your main crop of ruta bagas, do it at once.

Dale's yellow hybrid, is a good kind to sow in this month.

If you sowed ruta bagas in seed beds last month, to be transplanted when fit to some other spot, take advantage of the first suitable day, and put them out, for if allowed to remain in the seed bed too long, they are apt to draw up, and become unhealthy and weak. (Read Art. 22.)

ONIONS.

590. Sow your general crop to plant out in October and November. Let your beds be well dug and manured, lay them off about four feet wide, draw slight drills twelve inches apart, and sow the seed regularly and pretty thick. The white Portugal, silver skinned, Maderia, yellow Strasburg, and Deptford red, are very good kinds. Seeds of your own raising is much to be preferred.

CARROTS AND BEETS.

591. Sow at any time in this month a full crop, and they may do well, but be sure that the seed is *genuine European*,

or they will run to seed early in the spring, at a time when they will be most desired.

SWISS CHARD.

592. This is a species of white beet, very common in Switzerland and France, where it is considered the best of all spinaceous plants. The mode of cultivation is simple, and in every respect like the beet. Let two or three seeds be dibbled in, eight or ten inches apart in the rows, which may be two feet asunder; and when well set, thin out to single plants.

Those pulled up, may be transplanted like cabbage plants. The soil should be rich, and they must be kept clear of weeds while young, and well watered in dry weather. They yield an abundance of fine luxuriant foliage, which shades and blanches the foot stalks, causing them to be very tender and delicate. The leaves are boiled and used as spinach; but the midribs or leaf stalks, for which it is principally cultivated, are dressed and served up like asparagus; these are very large, some of them three inches in diameter, and very white and tender.

CABBAGES.

593. You may sow in this month the genuine European seed, sow only a little, for your main sowings must be in October. (Read Art. 47 attentively.) You must now transplant all the plants you may have, that are fit to be handled.

CAULIFLOWERS AND BROCOLI.

594. Set out all the plants you may have left. (See July.)

SNAP BEANS.

595. Sow your last crop of this bean early in this month, and if the weather is mild, in October you will get a good supply of pickles.

SPINAGE.

596. Sow more spinage to succeed the former sowings.

ENDIVE.

597. If desired, sow early in this month as you would lettuce.

LETTUCE.

598. Sow for a full supply, to be put out for use in winter. Transplant such as are fit from the sowings of the last month.

CELERY.

599. You may transplant more celery at any time in this month, but do it as early as possible.

600. Do not neglect to haul the earth up to such plants as are already planted out and require it; taking care that you do it in dry weather. (For directions, see June, parag. 539.)

RADISHES.

601. Sow salmon, short top, and turnip radishes, and if the weather is dry, give moderate waterings every evening.

CRESSES, WHITE MUSTARD AND SALADING.

602. Sow these seeds at any time in this month; for a regular supply, sow every week or ten days.

The curled cress or pepper grass, is the best kind; sow in little drills one foot apart, and cut before it comes into rough leaf.

MUSHROOMS.

603. This is the proper time to make mushroom beds.—(For directions, read Art. 45, on the mushroom.)

ART. LIX.

604. VEGETABLE CALENDAR FOR OCTOBER.

CABBAGES.

605. You may make two sowings in this month; one in the early part, and another towards the twentieth of the month. But be very sure it is *European seed*, and read attentively Art. 47, on spring cabbages, *before you sow the seed.*

CAULIFLOWERS AND BROCOLI.

606. Should you yet have any plants remaining, put them out at once; if they pass through the winter, they will make fine heads in the spring.

LETTUCE.

607. Continue to sow the different kinds of lettuce seed.—Those sown last month, should be set out as soon as they can be easily handled.

SNAP BEANS.

608. Hoe your snap beans often, and haul the earth up well to their stems.

TURNIPS.

609. Hoe and thin your turnips, if you wish to obtain a good crop. They should be hoed often and kept clean, as it will greatly forward them.

You may still sow turnips, and if you have European seed, they will not run up early in the spring.

SWISS CHARD.

610. If you sowed none of this delightful vegetable last month, do so early in this. (For directions, see parag. 592.)

LEEKS.

611. If you have any plants in the seed bed, let them be all put out at once. (See June, paragraph 543.)

ONIONS.

612. Now plant out all the plants that are fit, from the seed beds of the last month's sowing; but if you sowed no seeds in those months, you must obtain the small onions or sets, from the seedsmen in Charleston; those from the seed beds, should have the ends of their leaves and roots trimmed off.

Make (not drills,) but marks, along the ground ten or twelve inches apart, and put the small onions or plants, six to eight inches apart in the marks; do not cover them with the earth; but just press them down upon the mark, with your thumb and fore finger.

The ground should be rolled (if you have a roller,) before you make the marks, and no earth should be allowed to rise about the plants. Keep the beds (which should be four feet wide, with four or five rows of sets or plants on each,) clean with the hoe, but do not hoe deep, or raise the earth about the plants, for these will cause the onions to *neck*, and not to *bulk*. Should any be running to seed, twist the neck down, and press it lightly with the foot.

613. As soon as the end of the leaves begin to look brown, bend down the necks, pressing it lightly with the foot, so that the leaves will lie flat to the earth, and when the leaves are nearly dead, yon must pull them up, and manage as directed in June, paragraph 544.

SPINAGE.

614. Sow your principal crop of spinage now. The round seeded, and the Flanders are the best. (See August, parag. 581.)

RADISHES.

615. Continue to sow as in former months.

CARROTS, BEETS AND SALSAFY.

616. Thin those that are advanced in their growth, and hoe and keep them clean; let the earth be kept loose between the rows, by using the small narrow spade; dig the beds carefully, that you injure none of the roots by going too near the plants. If you neglected sowing any of these seeds, you may yet succeed, if planted immediately.

ENDIVE.

617. Tie up the well grown plants on a dry day, with strings of cotton wick, or moss; hauling the earth well up all round the plants, will greatly assist in bleaching them.

CELERY.

618. Continue to earth up your celery, making choice of a dry day to do this work. (For directions, read June, parag. 540.)

ARTICHOKES.

619. These should now have their regular winter's dressing. Remove well the earth from the stool or plant; and with a piece of hard wood, made sharp and like a chisel (about six inches long, two inches wide, and a quarter of an inch thick,) slip off close to the stock, all the shoots except five or six of the largest and best. Lay on the roots and stool, and between the shoots, a good wheel barrow full of old well rotted manure; let it lie even where the earth was taken out, and then cover the whole with the earth, raising it six or eight inches higher than it was before; do not let the earth fall into the hearts of the plants, which will injure them very much. Some of these shoots which are to make new plantations in February, when three only will be left remaining on the old stool. (See February, paragraph 410.)

ASPARAGUS.

620. The last of this month, is the proper time to give these beds their winter dressing, or as soon as the stalks are yellow.

Cut off all the stalks, and hoe the beds and alleys perfectly clean; then with your fork, which should have three tines, (see Art. 51, February, paragraph 417,) let your beds and alleys be well forked up four inches deep, and then with a rake, haul off the earth to the depth of one or two inches, and spread evenly on the top, several inches thick, some good old rotten manure, that has been well broken up, and the lumps made fine, then let the alleys (which should be fifteen inches wide,) be well dug up, the earth pulverised, and cover the manure with the same; after which rake the beds smooth and level.

TART RHUBARB.

621. Dress these beds as you would asparagus. (Read Art. 40, paragraph 308.)

GARLIC AND ESCHALLOTS.

622. Plant these on beds four feet wide, well dug and manured, put four rows on each bed, about twelve inches apart, and the roots nine inches from each other in the rows.

MANGOES.

623. In the latter part of this month, (or earlier if you think that the weather indicates frost,) select some of the largest fruit on the vines, to be reserved for planting out in the spring; they must be kept during the winter, where they will not be injured by frosts, but not in too warm a place, or they will commence growing, and perhaps exhaust themselves.

624. "They may be kept packed in dry sand the whole winter, and without further care than keeping them in a moderately warm room. When kept without this precaution, they shrivel up in consequence of loss of moisture, and do not eat as well.

"When a frost is expected, some fresh stable manure should be heaped over the crown of the old roots, and thus left until the vines are killed; protected in this way, they will survive the winter, and being a perennial, will every year amply repay the little trouble given.

625. "Protecting the roots (as above) in winter, is a matter of little consequence, as they can be so easily replaced by planting the fruit in the spring. (See March, paragraph 483.) It has been usual to keep none but those which showed the bean at the lower end—but this is not necessary: in fact they

should not be so far advanced, for they very often commence growing, with all the precautions that can be taken, and send out shoots several yards long, and consequently exhaust themselves greatly, and sometimes dry up and perish before the spring arrives, when they are to be planted; should they have shoots of any length, they must be trimmed before planted." (See March.)

RYE AND BARLEY.

626. Sow a full crop at any time in this month. (For directions, see Art. 17, paragraph 169.)

This is a good time to sow, to be turned in as a manure in March or April, for a crop of potatoes, melons, &c.

ART. LX.

395. VEGETABLE CALENDAR FOR NOVEMBER.

CABBAGES.

628. Keep clean and hoe often all your plants which have been put out; let the earth be kept loose, and hauled up well to the stems of the plants; this will greatly forward them; all decayed leaves should be immediately removed.

629. If you sowed European seeds in August, for an early spring crop, you may put them out, but if the plants be of American seeds, they will all run to seed early in the spring. (Read Art. 47, on spring cabbages.) If you neglected sowing in the last month, do so at once, as advised in the said Article, paragraph 344.

PEAS.

630. Sow your first crop about the tenth of this month, and if they escape the frost, they will be fit for use early in April. Choose a well sheltered border or bed, open to the sun, but protected by a fence or building, from the north-west winds.—(Read Art. 3, on protecting frames and fences.) Draw one drill only lengthwise, about one foot from the wall or fence, and if your bed is five or six feet wide, you may draw drills athwart the bed, and in double rows four feet apart, running

from the outer edge, to within one foot of the first drill, which was made lengthwise next to the fence. Sow the seeds pretty thick, but as regularly as possible, and cover about one and a half inches deep with earth. The early Spanish, Bishop's dwarf, early frame, Charleton, hotspur, and dwarf marrowfat, are fit kinds.

Dressing the bed with a small quantity of shell lime or marl, will be found advantageous.

ONIONS.

631. Plant out small onions or plants, raised from seed sown in August and September, if you have not yet done so. (For directions, see October, paragraph 612.)

TURNIPS.

632. If you have English or European seeds, you may sow now, and if they are not injured by the cold, they will be very good when those from our own seed are shooting up into seed stalks.

If you sow now, protect with a little straw whilst young.

CARROTS, LETTUCE, RADISHES AND SPINAGE.

633. You may still continue to sow. (For directions, read former months.)

BEANS.

634. You may now plant for an early spring crop, the Mazagon, Windsor, long pod, or any other of the varieties.

They may be planted between your early peas, putting one row between each double row of peas, and the beans two or three inches in the rows, cover one and a half or two inches deep. Beans planted in a seed bed, (and transplanted when about two inches high, in rows as above,) are easily protected when in severe weather, and when transplanted, will come in a week or so earlier.

CELERY.

635. Continue to earth up your celery as before directed.—(See paragraph 540.)

ARTICHOKES AND ASPARAGUS.

636. If not attended to last month, it should not be delayed any longer. (See last month, paragraphs 619 and 620.)

GARLICK AND ESCHALLOTS.

637. You may plant out more of these, at any time in this month. (For directions, see October, paragraph 622.)

Art. LXI.

638. VEGETABLE CALENDAR FOR DECEMBER.

PEAS.

639. If these were not sown in the last month, let them be put in *early* in this. (See directions in last month, parag. 630.)

You may now sow your principal crop, but do not delay it until the last of the month.

If you plant in *double rows*, let them not be more than eight inches from each other, and the peas will not require as many sticks; the double as well as single rows may be put from four to six feet apart.

640. All your peas from the lowest dwarf, should have good sticks (stuck in obliquely,) for their support. And as they advance in growth, should be often hoed and earthed up.—You may give them a trellis. (See Fig. 4, Art. 49.) The dwarf kinds may do without sticks, but they never will yield as much as when properly supported with sticks.

You may now sow any of the different kinds of peas; by sowing both early and late kinds, you will have a regular succession. The marrowfats and those named in the last month, (paragraph 630,) are good kinds; the former are great bearers, and grow to the height of six feet.

BEANS.

641. Continue to plant the Mazagon and Windsor, or any other kind. (For directions, see last month.)

ONIONS.

642. You should plant out all your small onions or plants, that you may have left, and do it at once. (See former months.)

GARLIC AND ESCHALOTS.

643. Continue to plant out these where wanted. (See October, paragraph 622.)

CABBAGES.

644. If you have any plants from your August sowings, put them out at once; or you may put out a few of those sown in September; they will come in for use in March or April, and will no doubt be acceptable.

645. You may sow European seed in the first part of this month, for a supply of late spring cabbages; but you must have them well protected. (Read Art. 47, on spring cabbages.)

SPINAGE.

646. Sow the round, prickly, or Flanders, but the latter is to be preferred. (For directions, see August, paragraph 581.)

LETTUCE, CARROTS AND RADISHES.

647. May still be sown, but they must be protected in very cold weather.

IRISH POTATOES.

648. You may try some (for an early crop,) about the middle or latter end of the month; they will remain in the ground some time, and their tops will likely be killed several times, but they will not be materially injured by it, unless they are so far advanced as to have formed tubers; when they will in most cases be entirely killed. (See January, parag. 392.)

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649. Art. LXII.—ORCHARD OR FRUIT GARDEN.

SOIL, SITUATION, &c.

650. "The situation of an orchard or fruit garden, (*says* Bridgeman,) should be one that has the advantage of a free circulation of air, and is well exposed to the south, also to incline a little to the east, and south-west. When the situation is low and close, the trees are very liable to become mossy, which always injures them, by closing up the pores of the wood; they are also more liable to be affected by blight. Although having an orchard closely pent up by trees, &c., is injurious, nevertheless a screen of forest trees, at such a distance from the fruit trees, as that the latter will not be shaded by them, is of great service in protecting the trees in spring from severe cold winds.

651. "A good strong loamy soil, not too retentive of moisture, to the depth of thirty inches, or three feet, is most suitable for an orchard. Great attention must be paid to the substratum, so that the ground is well drained, for if the top soil be ever so good, and the bottom be wet, it is a very rare case to find that the trees will prosper for many years, before they begin to be diseased and go to decay. As it is so indispensably necessary to the success of fruit trees, that the bottom be dry, if it be not naturally so, it must be made so by judicious draining.

"When it is necessary to make the bottom dry by draining, it must be done for some time before the trees are planted."

ART. LXIII.—PLANTING FRUIT SEEDS AND STONES.

652. The stones of *peaches*, *plums* and *cherries*, should be planted in the fall of the year, that they may be benefited by the action of the frost, which causes them to germinate more freely.

Seeds are usualy only sown to furnish stocks, upon which to engraft or bud.

653. MARSHALL observes, that, "those *seeds* or *stones* that are saved early, or are to be kept through the winter, for early sowing, (which many prefer) should be preserved from air in dry sand:—Let them be put in a box, layer upon layer, three or four courses, covering the top three inches, and guard against mice.

654. "The *sowing* as to depth, must be according to the size of the seed. The seed or kernels of apples and pears, may be sown in *drills* a full inch deep, a foot asunder, and scattered thinly in them, pressing the ground a little to them.

"The *stones* of any fruit should be sown at near two inches in depth; and nuts, &c., at three or four. Stones and nuts must be set thin, and (it is of some advantage,) the small end upwards, as here the shoot pushes out, or they may be laid flat.

655. "*Prepare the bed* by digging the soil well, to a full foot in depth, and let the surface be made fine; thus will the roots strike down freely, to preserve themselves from draught;

wet will drain away, and the young plant push straight upward: four feet beds are the best."

ART. LXIV.—PROPAGATING BY CUTTINGS.

656. "Cuttings (says COBBETT,) are short pieces, cut in the spring, from shoots of the *last year*, and it is, in most cases best, if they have a joint or two of the *former year's wood*, at the bottom of them. The cutting should have altogether, about six joints, or buds; and three of these should be under the ground when planted. The cuts should be performed with a sharp knife, so that there may be nothing ragged or bruised about either wood or bark.

657. "*The time for taking off the cuttings*, is that of the breaking up of frost, (viz: early in the spring.) They should be planted in a shady place, and watered with rain water in dry weather, until they have got shoots several inches long. When they have such shoots, they have also roots, and when they have these, no more watering is necessary."

658. It would be advisable in this climate, to cover the ground with leaves of trees, woods earth, or swamp muck, several feet around the cutting; this will keep the ground cool and moist about the plant.

CHOICE OF CUTTINGS.

659. "In respect to the choice of cuttings, (observes LOUDON,) those branches of trees and shrubs, which are thrown out nearest the ground, and especially such as recline, or nearly so, on the earth's surface, have always the greatest tendency to produce shoots.

660. "*Cuttings then are to be chosen* from the side shoots of plants, rather than from their summits or main stems; and the strength and health of side shoots being equal, those nearest the ground should be preferred."

ART. LXV.—PROPAGATION BY SLIPS.

661. COBBETT says, "slips differ from cuttings in this, that the former are not cut, but pulled from the tree. You take a shoot of the last year, and pull it downwards, and thus slip it off. You trim the ragged bark off; then shorten the shoot, so that it have six joints left; and then plant it and manage it in the same manner as directed for cuttings. The season for the work is also the same."

ART. LXVI.—PROPAGATION BY LAYERS.

662. "Take a limb or branch of a tree, in the fall, or early in spring, and pull it down in such a way, as to cause its top or small shoots, and twigs, to lie upon the ground. Then fasten the limb down by a peg or two, so that its own force will not raise it up. Then prune off all the small branches and shoots that stick upright; and, having a parcel of shoots lying horizontally, lay earth upon the whole, all along upon the limb, from the point where it begins to touch the ground, and also upon the bottoms of all the shoots. Then cut the shoots off at the points, leaving only two or three joints or buds beyond the earth.

663. "*The earth laid on* should be good, and the ground should be fresh digged and made very fine and smooth before the branches be laid upon it. The earth laid on, should be from six inches to a foot thick. If the limb or mother branch be very stubborn, a little cut on the lower side of it will make it the more easy to be held down. The ground should be kept clean from weeds, and as cool as possible in hot weather.

664. "These layers will be ready to be taken up and planted out as trees, after they have been laid a year."—*Cobbett.*

ART. LXVII.—PROPAGATION BY SUCKERS.

FROM THE AMERICAN GARDENER.

665. *Suckers* are, in general, but poor things, whether in the forest, or in the fruit garden. They are shoots that come up *from the roots*, at a distance from the stem of the tree, or at least, they do not come out of that stem. They run to wood and to suckers, more than trees do that are raised in any other way.

666. *Fruit trees raised from suckers*, do not bear so abundantly, and such good fruit, as trees raised from cuttings, slips or layers. A sucker is in fact, a little tree with more or less of root to it, and is of course treated as a tree.

ART. LXVIII.—PROPAGATION BY BUDDING, OR INOCULATING AND GRAFTING.

667. "To have fruit trees by budding, or grafting, you must first have *stocks;* that is to say, a young tree to bud or graft upon. The sorts of stocks proper for the sorts of fruit trees respectively, will be mentioned under stocks.

STOCKS.

668. "These (continues COBBETT,) must be of different ages and sizes, in different cases; and even the propagation of the stocks themselves, is not to be overlooked.

"*Stocks are formed* out of suckers, or raised from seed; and the latter is by far the best; for suckers produce suckers, and do not grow to a handsome stem or trunk.

"*Of the raising of stocks.*—If the stocks be of *crabs* or *apples*, the seeds of these should be collected in the fall, when the fruit is ripe. When the seeds are collected, put them immediately into fine earth; or sow them at once; and perhaps, the best way is to sow them early in the spring.

"If the stocks be, to be of *stone fruit*, the stones, as of cherries, plums, peaches, and others, must be got when the fruit is ripe. The best way is to put them into fine earth, and keep them there till spring. The earth may be put into a

barrel; or be placed in a cellar; or a little pit may be made in the ground, and it may be placed there. When the winter breaks up, dig a piece of ground deep, and make it rich; make it very fine; form it into beds, three feet wide; draw drills across it, at eight inches distance; make them from two to three inches deep; put in the seeds pretty thick, (for they cost little;) cover them completely; tread the earth down upon them; and then smooth the surface. When the plants come up, thin them to about three inches apart; and keep the ground between them perfectly clean during the summer.—Hoe frequently; but *not deep near the plants;* for we are speaking of *trees* here; and trees do not renew their roots quickly, as a cabbage or turnip does.

669. "These young trees should be kept during the first summer, as *moist* as possible without watering; and the way to keep them as moist as possible, is to keep the ground perfectly clean, and to hoe it frequently.

670. "*The next spring these seedlings* should be taken up; or this may be done in the fall. They should be planted in rows four feet apart, to give room to turn about amongst them; and at two feet apart in the rows, if intended to be budded or grafted, without being again removed. If intended to be again removed before budding or grafting, they may be put at a foot apart.

"They should be kept clean by hoeing between them, and the ground between them should be *dug in the fall,* but not at any other season of the year. The plants will grow fast or slowly, according to the soil and management; and he who knows how to bud or graft, will know when the stock is arrived at the proper size for each purpose."

671. "*Stocks for budding* may in general, be much smaller than for grafting, as the operation may be performed on the same year's shoot. But it may also be performed on shoots or stems of several years growth; and in such, by inserting a number of buds, a complete tree may be formed at once."—*Loudon's Ency. Gardener.*

672. *Apples* are best to be grafted or budded upon stocks, raised from apple kernels, but the crab stock may be found more convenient for most persons.

673. *Pears* on stocks raised from pear kernels; or upon the quince; though the first is to be preferred.

674. *Plums and apricots* on stocks of the plum kind.

675. *Peaches and nectarines;* several sorts of stocks are

used for these, such as peach, plum, almond, and apricot.—But if the peach is put upon the plum stock, so rapid is the growth of the peach, that it is apt to overgrow the stock in a few years.

676. *The common wild plum of Carolina*, may be procured in any quantities, and will be found a convenient and excellent stock for most stone fruits to be budded or grafted on.

PRINCE says, "in England the plum is preferred as a stock for the same trees, the almond is used for in France—(viz: *peaches, apricots, nectarines, &c.,*) but there certainly exists a great disadvantage in using the plum as a stock for these fruits, as the growth of the latter being much more vigorous, they are apt to overgrow the plum; and the latter being in many instances unable to furnish an adequate portion of sap, to promote the growth of the former, they cannot attain to their natural developement, but form only trees of diminutive stature.

"This retarding of the growth, however, may cause the trees to arrive at a state of fruition at an earlier period, and if they are intended as appendages to small gardens, and not for orchards, where great space could be allowed, their minor size might be deemed a convenience, if not an advantage."

BUDDING.

677. "Procure a thin knife which has a thin blade, and a sharp ivory handle; the use of the handle is to prepare the buds, and the handle is used to raise the bark of the stocks, so that the buds can be easily inserted.

Have some good strong bass in readiness, and then take some good thrifty sprigs from trees, of the sorts you intend to propagate. When all is ready, make a cut in the bark of the stock transversely, and from the middle of this cut, make another downwards, at least two inches in length, so that the two cuts may be in this form ⊤; then take one of your sprigs, and with expedition proceed to take off a bud: this is effected by entering the knife a little more than half an inch below the bud or eye: force your knife into the wood, drawing it under the bud, and cut the piece off across the shoot; then immediately let that part of the wood which was cut off with the bud, be seperated from it, which may be readily done with the knife, by placing the point of it between the bark and wood at one end, and holding the bark in one hand, pull off

the woody part with the other, which will ready come from the bark, if the tree from which it was taken, be in vigorous condition.

Examine the bark, so as to be satisfied that the bud remains perfect; if there is no hole in it, let it be immediately inserted into the stock, observing for the reception of it, to raise with the handle of your knife, the bark of the stock downwards, on each side from the cross cut, and thrust the bud in between the bark and the wood, applying it as close as possible.

"As soon as the bud is put in its place, tie it round nicely and securely with the bass, beginning a little below the cut, and proceeding upwards, till you are above the cross cut, taking care to miss the eye of the bud, just that it may be seen through the bandage of the bass.

678. "About a week or ten days after the stocks have been budded, they should be examined, when such as have united will appear fresh and full, and those that have not taken, will appear decayed; in the former case, the bandage may be left off, and in the latter case, the stock may be budded in another place; provided the first operation was done in the months of July, or early in August, as these are two the most preferable months for budding fruit trees in general. Budding is, however, often attended with success, if done in September."—*Bridgeman.*

ADVANTAGES OF BUDDING.

679. LOUDON observes that, "budded trees are generally two years later in producing their fruit, than grafted ones; but the advantage is, that where a tree is rare, a new plant can be got from every eye. Whereas, by grafting it can only be got from every three or four eyes. There are also trees, which propagate much more readily by budding than grafting; and others, as most stone fruits, are apt to throw out gum when grafted.

"When grafting has been omitted, or has failed in spring, budding comes in as an auxiliary in summer."

CHOICE OF BUDS.

680. "For gathering the shoots containing the buds, (LOUDON advises) a cloudy day, or an early or late hour should be chosen on this principle, that the leaves being at these periods in a less active state of perspiration, suffer least from being separated from their parent plant."

PRESERVATION OF BUDS.

681. LOUDON says, "they are preserved fresh, and may be sent a great distance, by inserting their ends in water or moist moss; though in general, they should be used as soon as possible after gathering; indeed, as in grafting and inarching, the whole operation ought to be performed with the greatest celerity.

682. "We may mention for the convenience of those who in moving or travelling from one part of the country to another, would be glad to secure a supply of buds of some favorite fruit for propagation; that if the twigs on which good buds are found, are cut (and the longer the twigs the better,) and immediately deprived of their leaves, by cutting the leaf stem with a pair of scissors or a sharp knife, and then wrapped in wet moss, or even wet cloths, they may be preserved for many days, in a fresh and healthy state, so as scarcely to fail of growing, where skillfully inserted."—*Genessee Farmer.*

GRAFTING.

683. This is generally performed in the months of March and April. There are several modes of grafting, and to read (even were I to write,) a full and minute account of the acts of budding and grafting, would require ten times the space of time that it requires to go to a neighbour's, or the nurseryman, and learn from the sight of the operation, which, if once seen, cannot be as easily forgotten, as when read from several pages in a book; and will be much more easily understood also.

I shall, therefore, insert the only mode of grafting, generally practised in this vicinity; to wit—

CLEFT OR CROWN GRAFTING.

684. This is the most simple and easily practised of all the different modes. Your stocks may be of one, two, or more inches in diameter; but large stocks should have two scions, one on each side; and sometimes (when there is much room,) four scions may be inserted in the head of one stock, putting them at equal distances apart.

The head of the stock should be carefully sawed off, and the top pared smooth; (taking care that the part is free from knots of any kind, or it will not split straight;) then with a thin bladed knife, split down the stock through the centre, to

the depth of two inches; placing a small wedge to keep it open for the easy insertion of the scion.

If possible, the scion should have an eye or two in the upper part, and should be cut in the form of a wedge, and carefully inserted, so that the inner bark of the scion, and of the stock may both exactly meet. Then tie them firmly together with bass, and cover the grafted part well, in an oval form, with grafting clay.

GRAFTING CLAY.

685. "The grafting clay of the French, (those celebrated horticulturists,) is composed of half cow dung free from litter, and half fresh loam, intimately incorporated. They prefer this to all others, for excluding the external air from wounds of every description, and ridicule the idea of certain complex compositions."—*Loudon.*

ART. LXIX.—TRANSPLANTING FRUIT TREES.

686. The season is just when the leaves become yellow, or as early in the spring as possible; but fall planting is found to succeed best with most fruit trees.

The holes should be dug somewhat larger than is sufficient to admit the roots in their natural position, and of sufficient depth to allow six inches of fine mould to be put in the bottom, and the tree when placed on this mould, to stand three inches deeper than it was before transplanting. Cut off all wounded parts of the roots with a sharp knife, and shorten the branches at least one third, or you may thin them out.

The earth for filling in, should be well pulverized, and three or four shovels full of *old well rotted dung* be thoroughly incorporated with it. Shake the tree several times while filling in the earth, that the soil may be admitted among the finer roots; after it is completely filled, let it be well trodden down with the feet. (Trees are frequently lost for want of hard treading with the feet, when they are planted.) Finish by making a bowl or hollow, around the tree to receive the water, which it is necessary to give it, should the weather

prove dry. Newly planted trees should be kept steady, by being tied firmly to one or more stakes, driven down well into the ground; but should not be fastened to the stake, until the earth has settled about the roots, which it will do after the first good rain. If tied before, the earth would sink, and leave cavities about the roots of the tree, which could not sink with the earth, because tied to the stake.

687. SQUIB says, "standard apple and pear trees, when planted in an orchard, should be at least thirty feet distant from each other; and if the land is rich and strong, if they had forty it would be the better.

"The rule to plant standard fruit trees in general is, to allow apple and pear trees in an orchard, from thirty to forty feet distance, every way; peaches, nectarines, and apricots, from twenty five to thirty feet distance; cherries and plums, from eighteen to twenty five; almonds, quinces, and medlars, from sixteen to twenty. Observing that these are the least distances that should be allowed; but where there is a good scope of ground, you may allow them five, ten, or even twenty feet more room: for in the end it will prove to be of greater advantage, when the trees arrive at their full growth."

ART. LXX.—MANAGEMENT OF IMPORTED TREES, &c., ON THEIR ARRIVAL.

BY PRINCE.

688. "As soon as the trees arrive at the place where they are to be planted, let a trench be dug in cultivated ground, the bundles unpacked, and the roots well wet, and immediately covered with earth in the trench, observing to make the earth *fine* that is spread over them so as not to leave vacancies for the admission of air to dry the roots—it having been found by experience, that the thriftiness of trees, the first season after transplantation, depends much on the fine fibres of the roots being kept moist, and not suffered to dry from the time they are taken up, until they are replanted—for if when the bundles are unpacked, the trees are carelessly left exposed to drying

winds, the young fibres of the roots must perish, and the trees, if they live at all, cannot thrive the first season, as they can receive little or no nourishment until those fibres are replaced."

ART. LXXI.—CULTIVATION OF FRUIT TREES.

689. "The ground (observes COBBETT,) is always to be kept clear of weeds. From the spring to the fall, frequent hoeing all the ground over, not only to keep away weeds, but to keep the ground moist in hot and dry weather, taking care never to hoe, but when the ground is dry at top. This hoeing should not go deeper than four or five inches; for there is a great difference between *trees* and *herbaceous plants*, as to *renewal* of *their roots* respectively. Cut off the lateral roots of a cabbage, or a turnip, of a wheat, or a rye, or an Indian corn plant, and new roots, from the parts that remain, come out in twelve hours, and the operation, by multiplying the mouths of the feeders of the plant, gives it additional force.

"But the roots of a tree consist of *wood*, more or less *hard;* they do not quickly renew themselves: they are of a permanent nature: and they must not be much mutilated during the time that the sap is in the flow.

"Therefore, the ploughing and digging between the trees, ought to take place only *in the fall*, which gives time for a renewal, or new supply of roots, before the sap be again in motion. For this reason, if crops be grown under trees in orchards, they should be of wheat, rye, barley, oats, or some thing that does not demand a ploughing of the ground in spring.

690. "In the garden, dig the ground well and clean, *with a fork* late in November; go close to the trees, but do not bruise the large roots. Clean and clear all well round the stem.—Make the ground smooth just there. Ascertain whether there be insects there of any sort. And, if there be, take care to destroy them. Pull, or scrape off all rough bark at the bottom of the stem. If you even *peel off the outside bark* a foot or two up, in case there be insects, it will be better.

691. "Wash the stems with water, in which tobacco has been soaked; and do this whether you find insects or not.—

Put the tobacco into hot water, and let it soak twenty-four hours before you use the water. This will destroy, or drive away all insects.

"As the trees are sometimes subject to be injured by moss, to remedy this, scrape it off with a round iron scraper; also dig round the trees, and bring fresh mould to them. When found necessary, thin their branches, cut off all dead or irregular shoots, as well as those which appear to be cankered, and in a decaying state, all of which should be cut off to some healthy leading branch.

692. "Be particular to use a saw, for taking off the limbs and branches, that are too large for the knife, and smooth the cut parts with a drawing knife, which is the most suitable for large amputations.

"In pruning, a good general rule is, never to shorten the branches, unless to improve the figure of the tree, and then to take them off very close at the separation, so that the round may heal well and soon. If the wound be very large, cover it with tar, or thick paint; if small, cow dung will be the best plaster, secured by a bandage of cloth.

693. "*In pruning at the time of planting out* a young orchard, you should have in view, the advantage of keeping the middle of the tree open, in order that the fruit, in every part of it, may receive the free influence of sun and air."—*Am. Gardener.*

694. Fruit trees should not be allowed to *blossom too early* in the spring, as their blossoms are liable to be destroyed by frost. A method to delay the blossoming of fruit trees, is to bare the roots of the trees, by removing the earth for some distance around the tree, and covering with a little coarse litter. This should be done in the fall, and it will backen them, and keep them from vegetating two or three weeks longer.

TO CAUSE THE TREES TO THRIVE.

695. "Young trees will not thrive, if the grass is allowed to form a sod around them, they should therefore, be kept clean and the earth mellow, to the distance of three or four feet around them, and every autumn, some well rotted manure should be dug in around each tree, and every spring, the bodies of the apple, pear, plum, and cherry trees, and others that it is particularly desirable to promote the growth of, should be brushed over with common soft soap, undiluted with

water; this treatment will give to the trees a thriftiness surpassing the expectation of any one who has not witnessed its effects."—*Prince on Horticulture.*

Art. LXXII.—PRUNING ORCHARD OR STANDARD TREES.

696. "*In pruning a newly planted orchard or standard tree,* the first object is the formation of a head. According to Abercrombie, this ought, in most kinds, to be circular, compact, and proportioned to the strength of the stem, with the branches well distributed, and sufficiently open in the centre, to admit the free circulation of air.

697. "*In the first spring* after a young standard has been planted, examine the primary branches, to see whether they will be sufficient with the secondary laterals, to be forced out by shortening, to form a good head. The primary branches should be so placed, as to balance each other, and be equally distributed round the tree. These first branches, if there be no secondary laterals, or none well placed, should be shortened down to two or four eyes each; or reduce a strong shoot to one third of its length, and a weak shoot to two thirds.

698. "*The second spring*, again revise the branches and secondary shoots, and reserve only as many as are vigorous, and well distributed. Afterwards leave the head to form of itself, cutting out superfluous and ill placed shoots, and shortening for the production of new laterals, only to fill a vacancy.

699. "*In the third or fourth year*, after planting a maiden tree, the foundation of a good head having been obtained, by judicious shortening, and the plant is sufficiently strengthened, it will become proper to let the tree proceed to bearing, with no greater check from the knife than is unavoidable. To this end, the lower branches should not be shortened at all, and the upright leaders very little; but where two shoots cross, let the worst be cut out. Moderate sized, and slender shoots, are more fruitful than strong luxuriant wood."

700. "*The object of pruning young standard trees,* (Nicol observes,) is to form a proper head. Generally speaking, the

shoots may be pruned in proportion to their lengths, cutting clean away, such as cross one another, and fanning the tree out towards the extremities on all sides; thereby keeping it equally poised, and fit to resist the effects of high winds.

"When it is wished to throw a young tree into a bearing state, which should not be thought of, however, sooner than the third or fourth year after planting, the leading branches should be very little shortened, and the lower or side branches, not at all; nor should the knife be used, unless to cut out such shoots as cross one another, as above hinted.

701. *Pruning bearing trees.*—"After an orchard tree is come into bearing, (ABERCROMBIE observes,) continue at the time of winter, pruning either every year, or every two, three, or four years, as an occasion is perceived, to cut out unproductive wood, crowded spray, and decayed parts. Also reduce long and outrunning ramblers, and low stragglers, cutting them to some good lateral, that grows within limits.

702. "When fruit spurs are too numerous, cut the strongest and most unsightly. Also keep the tree pretty open in the middle. If it be necessary to take off large branches from aged trees, use a chisel or saw, and afterwards smooth the wound with a paring knife.

703. "In case old wood is to be cut down to young shoots springing below, to make the separation in summer, will be of more advantage to those young shoots, though it is not a common practice, on account of the liability of many stone fruit bearers to exude gum, when a large branch is lopped in the growing season. Observe to keep the stem clear of all lateral shoots, and eradicate all suckers from the root.

704. "*In pruning aged trees* that have run into a confusion of shoots and branches, and whose spurs have become clustered and crowded, the saw and the knife may be exercised with freedom; observing to cut clean away all useless spray, rotten stumps and the like excrescences. Thin out the spurs so as to let the air circulate freely among the leaves and fruit in the summer season, and to admit the rays of the sun, so as to give the fruit colour and flavour.

705. "*Treatment of deformed or diseased trees.*—Where a tree is stunted, or the head ill shaped, from being originally badly pruned, or barren from having overborne itself, or from constitutional weakness, the most expeditious remedy is, to head down the plant, within three or four, or five eyes, (or inches if an old tree,) of the top of the stem, in order to

furnish it with a new head. The recovery of a languishing tree, if not too old, will be further promoted by taking it up at the same time, and pruning the roots; for, as on the one hand, the depriving too luxuriant a tree of part, even of its sound healthy roots, will moderate its vigour, so, on the other, to relieve a stunted or sickly tree of cankard or decayed roots, to prune the extremities of sound roots, and especially to shorten the dangling tap roots of a plant, affected by a bad subsoil, is, in connexion with heading down, or very short pruning, and the renovation of the soil, and draining, if necessary, of the subsoil, the most availing remedy that can be tried.

706. "*The season for pruning orchards* is generally winter, or early in spring—not later than February, according to ABERCROMBIE and NICOL. QUINTINEY says, "a weak tree ought to be pruned directly at the fall of the leaf." And ABERCROMBIE says, "to prune in autumn strengthens a plant, and will bring the blossom buds more forward; to cut the wood late in the spring, tends to check a plant, and is one of the remedies for excessive luxuriance."—*Loudon's Ency. Gard.*

707. *Wounds* may be covered with a composition of rosin, tallow, beeswax, and ochre, melted and mixed well together; or soot mixed up with water, to which add a little train oil, well worked up, but so that the mixture finally remain stiff.

ART. LXXIII.—DISEASES OF FRUIT TREES.

708. "Generally speaking, careful pruning, cleaning the bark all over with a brush, applying soap or tobacco water to the leaves, and occasionally putting good earth and good manure to the roots, will remedy most diseases in fruit trees; removing them from a bad to a better soil, will of course, effect this, where it proceeds from a poorness of land; for the old adage, "remove the cause and the effect will cease," will be here exemplified.

709. "To cure the oozing of the gum, nothing is more necessary, than to cut away the diseased parts of the bark; and by thus assisting nature to cast out the excrementitious, or noxious juices, a complete cure may be effected."—*Bridgeman.*

ART. LXXIV.—INSECTS INJURIOUS TO FRUIT TREES.

710. "*The preventive operations*, (observes BRIDGEMAN,) are those of the best culture. Fall ploughing, by exposing worms, grubs, the larvæ of bugs, beetles, &c., to the intense frost of winter, and the moderate use of salt, lime, ashes, &c., are beneficial. Insects may be annoyed, and sometimes their complete destruction effected, by the use of soap suds, lie, tar, turpentine, sulphur, pepper, soot, decoction of elder, walnut leaves, tobacco, (pride of India berries,) and other bitter and acid substances; but perhaps the most effectual way, of keeping some of the most pernicious kinds of insects under, is to gather up such fruit as may fall from the trees, before the insects have an opportunity of escaping into the earth, or to other places of shelter." (See Art. 4, paragraphs 63, 64, 65 and 66; and Art. 80, paragraph 733.)

711. "The following compositions, have been known to protect fruit trees from the attacks of numerous insects, by being used as a wash to the trees, immediately after the winter pruning. The constitution of some trees will bear a much stronger mixture of ingredients than others; but the proportions, as hereafter described, will not be injurious to any, but will be effectual in the destruction of the larvæ of insects.

712. "*For apricot, nectarine, and peach trees.*—To eight gallons of water, add one pound of soft soap, two pounds of common sulphur, and half an ounce of black pepper.

713. "*For apple, cherry, pear, and plum trees.*—To four gallons of water, add one pound of soft soap, two pounds of common sulphur, two ounces of tobacco, and one ounce of black pepper.

714. "*For figs and vines.*—To four gallons of water, add half a pound of soft soap, one pound of sulphur, and a quarter of an ounce of black pepper.

"All these ingredients must be boiled together, for twenty minutes at least, and when in a lukewarm state, applied to the bark of the trees with a suitable brush."—*Bridgeman.*

Art. LXXV.—APPLES.

715. "Rich strong loams are the soils most conducive to the growth of the apple—the roots of apple trees, being more horizontal than perpendicular, they require a soil less deep than the pear, and it is on this account, that moist soils are more requisite for the apple, as the roots extending themselves near the surface, are not benefitted by the moisture which is found at a greater distance from the surface of the earth.—Apple orchards will, however, succeed on any soil, except a quick sand, or a cold clay, if proper attention is paid to keeping the ground in constant cultivation, and manure is regularly dug, or ploughed in around the trees. Old well rotted stable manure, decomposed vegetable mould, from swamps or woods, and river mud, have been found most suitable for this purpose."—*Prince.*

Art. LXXVI.—PEARS.

716. "These require (says Prince,) a deep light soil, in which their perpendicular roots can easily penetrate—clay, compact, cold, and wet soils, do not suit their growth. When the roots of the pear penetrate, so as to reach the water, the branches become long and slender, and the leaves narrow, changing speedily to a yellowish appearance, and the ends of the branches often perish, as if burned.

717. "*With regard to manuring and keeping the ground cultivated,* the pear requires the same attention as that prescribed for the apple. This tree is, however, subject to one malady, peculiar to itself, commonly called the *fire blight* or *brulere*, which attacks trees in the most flourishing state, generally commencing at the top, or extremity of the branches, and extending downwards. This is caused by a stroke of the sun, which extracts the sap from the uppermost branches of the tree, or from such as are most exposed to its influence, with more rapidity than it can be replaced, or from powerful rays of the sun, heating the bark to such a degree, as to arrest or multiply the progress of the sap. It is therefore, recommended to plant trees in pear orchards, much closer than in

those of the apple. The only remedy against these attacks, is to immediately saw off the branches, one or two feet below where the blight extends, in which case they generally revive."

718. "*Pears are grafted* on pear stocks, on quince stocks, or on those of the white thorn. The last is best, because most durable, and, for dwarf trees, much the best, because they do not throw up wood so big and so lofty. For orchards, pear stocks are best; but not from suckers on any account.—They are sure to fill the orchard with suckers.

719. "*The pruning* for your pear trees in the garden, should be that of the peach. (Art. 77, paragraphs 727 and 728.)—The pears will grow higher; but they may be made to spread at the bottom, and that will keep them from towering too much."—*Cobbett.*

Art. LXXVII.—PEACHES.

720. Prince says, "*the preferable soil for a peach orchard*, is a rich sandy loam, but this fruit will succeed in any soil, with proper attention to cultivation and manuring; particular care, however, should be taken, not to plant a new orchard on the site of an old one. It may be necessary also, to remark, that the ground where they are planted, should be kept in a constant state of cultivation, as they become bark bound and unthrifty, the second year after the grass has formed a sod around them. There are two causes which have operated against the success of this tree, and which seem peculiar to it, the one is a *worm* which attacks the tree at the root, near the surface of the ground, and often totally encircles it; the other is a disease usually denominated the *yellows*.

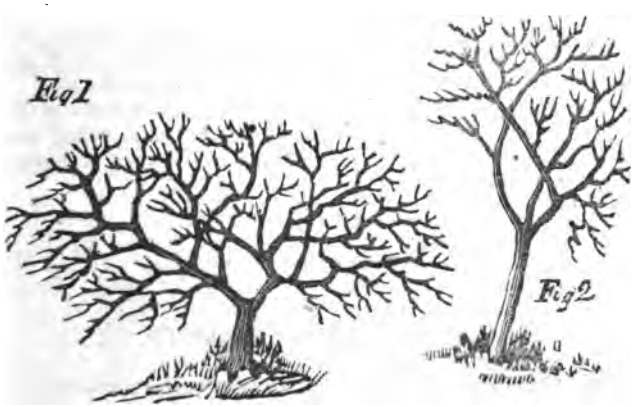
721. "*The worm.*—The most proper course to obviate the depredations of the worm, is to examine the trees every spring, and autumn, and to make an application of a mixture of fresh cow dung and clay, to the wounds which have been made by them, at the same time, destroying any worms that may be found.

722. "*Lime* or *ashes* thrown around the roots of peach trees, are found to prevent, in a great measure, the depredations of the worm.

723. "*Yellows.*—This disease is by far more destructive to peach trees, than the worm, and is evidently contagious. This disease is spread at the time when the trees are in bloom, and is disseminated by the pollen or farina, blowing from the flowers of diseased trees, and impregnating the flowers of those which are healthy, and which is quickly circulated by the sap through the branches, foliage, and fruit, causing the fruit, wherever the infection extends, to ripen prematurely.

724. "As soon as a tree is discovered to possess the characteristics of the disease, which is generally known by the leaves putting on a sickly yellow appearance—but of which the premature ripening of the fruit is decisive proof—it should be marked, so as to be removed the ensuing autumn, which must be done without fail, for if left again to bloom, it would impart the disease to many others in its vicinity; care is also necessary, in its removal, to take out all the roots of the diseased tree, especially if another is to be planted in the same place, so that the roots of the tree to be planted, may not come in contact with any of those of the one which was diseased.

725, "*Peaches are propagated by budding;* and the stock should be of plum. (See Art. 68, paragraphs 675 and 676.) Look at the two figures here annexed, Fig. 1, and Fig. 2.—The first is a peach tree, such as I would have it at four or five years old; the second is a peach tree, such as we generally see at that age.



726. "The practice is to plant the tree, and to let it grow in its own way. The consequence is, that in a few years, it runs up to a long naked stem, with two or three long naked limbs, having some little weak boughs at the tops, and the tree being top heavy, is nineteen times out of twenty, leaning on one side; and it presents, altogether, a figure by no means, handsome in itself, or creditable to the owner.—This is Fig 2. Now to have Fig. 1—the following is the way.

727. "*The tree should, in the first place*, be budded very near to the ground. After it be planted, cut it down to within a foot and a half of the ground, always cut sloping close to a bud. In this foot and a half, there will be many buds, and they will, the first summer, send out many shoots. Now, when shoots begin to appear, rub them all off but *three*, leave the top one, and one on each side, at suitable distances lower down. These will, in time become limbs.

728. "*The next year*, top the upright shoot (that came out of the top bud,) again, so as to bring out other horizontal limbs, pointing in a different direction from those that came out the last year. Thus, the tree will get a spread. After this, you must keep down the aspiring shoots; and every winter, cut out some of the weak wood, that the tree may not be overburdened with wood. If in time, the tree be getting thin of bearing wood, towards the trunk, cut some of the limbs back, and they will send out many shoots, and fill up the naked places.

"The lowest limb of the tree, should come out of the trunk, at not more than nine or ten inches from the ground. The greater part of the tree, will be within the reach of a man from the ground; and a short step ladder reaches the rest.

"By this management, the tree is always in a state of full bearing. *Always young.*—To talk of a tree's being *worn out* is nonsense. It is the *pruning* that makes it always young."—*Cobbett.*

ART. LXXVIII.—APRICOTS.

729. This very delightful fruit thrives in the same soil, and with the same culture, as the peach and the nectarine. It

comes earlier than the peach, is a harder tree, and bears as well, and the green fruit, when the size of a hickory nut, makes a very fine tart. When ripe, or nearly ripe, it makes a better pie than the peach.

730. The apricot is apt to produce *too great a quantity* of fruit—in such cases, it is necessary to thin them out, or they will be of inferior size and quality.

This tree *lives to a good old age*, and should be budded on plum stocks, or upon stocks raised from apricot stones. They do not bear as soon as the peach by one year.

COBBETT says, "I have heard that the apricot does not do in this country! That is to say, I suppose, it will not *do of its own accord*, like a peach, by having the *stone flung upon the ground*, which it certainly will not; and it is very much commended for refusing to *do* in this way. But, properly managed, I know it will *do;* and, indeed, who can believe that it will not *do* in a country, where there are no blights of fruit trees worth speaking of, and where melons ripen to such perfection in the natural ground, and almost without care."—(For pruning apricots, see peach, paragraphs 727 and 728, of Art. 77.)

ART. LXXIX.—NECTARINES.

731. In propagation, planting, and cultivation, proceed in all respects as with the peach.

ART. LXXX.—PLUMS.

732. "The plum, (observes PRINCE,) is not difficult in adapting itself to almost any soil; indeed, it flourishes in every situation, but in a clay, marshy, or too sandy soil. A light rich soil is, however, preferrable, and the same care is necessary as has been recommended for fruit trees generally, in keeping the ground cultivated around them when young;

for although it is a common observation, that the plum trees succeed best in a hard trodden soil, and though such a situation may cause the trees to retain their fruit, still it must be decidedly unfavourable to their growth.

733. "Plums, apricots, and nectarines, are smooth skinned fruit, and are in some parts of the United States, subject to be injured by a small bug called the *curculio*, which stings the fruit, and causes it to drop before it has attained its proper size. Their depredations may be effectually prevented, by paving round the tree *as far as the branches extend*, as it has been incontestibly proved, by frequent experiments, that the *curculio* will not infest those trees, where they cannot find means of immediately concealing themselves in the ground on dropping from the branches. (See Art. 4, paragraphs 64, 65 and 66.)

734. "*Plum trees are also subject to injury* from another insect, which stings the branches, and causes large protuberances to form on them, which if not cut off, produce a canker that in time destroys the tree.

735. "The plum is grafted upon *plum stocks*, raised from *stones* by all means; for *suckers* send out a forest of suckers. The pruning is precisely that of the peach. A green gage plum is very little inferior to the very finest peach."—*Cobbett.*

Art. LXXXI.—CHERRIES.

736. "This is a tree which accomodates itself to a variety of soils, and will succeed any where but in a clay, a very arid, or a low wet situation. The soil, however, to be preferred, is a light, rich, or sandy loam, of considerable depth. The *soil* around them *must be kept cultivated*, until they have attained a considerable size.

737. "If the bodies of the trees become bark bound, some rotten manure must be dug in around them, and the bodies and largest branches, be brushed over with soft soap."—*Prince on Horticulture.*

738. "Cherries are budded, or grafted upon stocks raised from cherry stones of any sort. The small black cherry tree,

that grows wild in the woods, are excellent stocks for budding or grafting upon, and may be easily procured in almost any quantity.

739. "In gathering cherries, (observes MARSHALL,) take care not to pull the fruit spur off, which is a very common thing. If they are properly ripe, they will part so easy from the tree, as not to do this mischief."

ART. LXXXII.—QUINCES.

740. PRINCE says, "this tree may be cultivated by scions and layers, or by budding on stocks of the same, or on the pear, hawthorn, &c. It flourishes best in a moist soil, where it produces the greatest crops, but will thrive in almost any good upland soil. It requires little attention as to pruning, but must be kept clear from suckers at the root; an occasional thinning out, however, of superfluous upper branches, where too close, and interfering with one another, would be advantageous.

741. "The *orange quince* is the *earliest* in ripening, and the *pear* and *Portugal* next, the *winter* being the *latest* of all, may be preserved for a long time, and used as occasion requires."

742. *This fruit is used* for making family preserves, marmalades, &c., and are baked in pies. The Portugal is considered the best.

"Quinces (observes MARSHALL,) hang till November. The ripe ones only are of value, which, after sweating a few days, must be laid singly (at some distance from one another,) on a shelf."

ART. LXXXIII.—MULBERRIES.

743. There are several varieties cultivated in this country, a few only are fit for the table, the others are either useful for

rearing silk worms, or for ornament only. They are propagated from cuttings, layers, and suckers.

744. *Those most valued for table use*, are the "black European, or black English, but which came originally (says PRINCE,) from Asia, and the red American, a common native of our forests."

ART. LXXXIV.—RASPBERRIES.

745. These are increased by cuttings, layers, or by suckers, which spring up in numbers from the root. COBBETT advises, "the suckers *of this year*, to be planted out in rows, six feet apart, and the plants two feet apart in the rows; this is done in the fall, or early in the spring.

746. "*At the time of planting*, they should be cut down to within *a foot* of the ground. They will bear a little, and they will send out several suckers, which will bear the next year. About four is enough to leave, and those of the strongest. These should be cut off in the fall, or early in spring, to within four feet of the ground, and should be tied to a small stake. A straight branch of *locust* is best, for then the stake lasts a life time at least, let the life be as long as it may.—The next year more suckers come up, which are treated in the same way."

ART. LXXXV.—STRAWBERRIES.

747. MR. PRINCE, the proprietor of the "*Linnæan Botanic Garden*," at Flushing, gives the following directions for the culture of this delightful fruit, and which, from experience, I am enabled to recommend for general adoption *in the South*.

"*The situation* should be an open exposure, but somewhat sheltered from the excessive heat of noon day. Moisture, and a degree of shade, are natural to this plant, as may be inferred from the situations it occupies in a wild state. A sandy soil

may cause an earlier maturity of the fruit, but will not be conducive to an abundant yield. A light, rich, loam is considered the most favourable, being soft and pliable, so that the runners may easily penetrate it with their roots. A mixture of bog earth is found advantageous; and in enriching the soil, *cold manures* are to be used.*

748. "I should consider *the best situations* for this plant, to be the north sides of hills, or the shady borders on the north side of a garden fence, or a hedge. The plantations in the vicinity of New-York, and which furnish that city with this fruit, are generally made by plain farmers, on good loamy soils, which are light and mellow, and occupy open and unsheltered fields. The yield from them is immense, and they are considered among the most advantageous appropriations of the soil.

749. "*The most favourable season to form beds*, is in September or October, which gives the plants sufficient time to establish themselves, and become well rooted before the ground freezes, and thereby prevents their being thrown out by the winter frosts.

750. "*In forming these beds*, you should select strong and vigorous runners, or off sets, in preference to taking old plants; these may be placed in beds, from three to four feet wide, and from ten to twelve inches apart each way, according to the extent to which the variety usually expands in its growth.

"Most varieties do best when allowed to run together, so as to form a complete matt—as in this case, one forms a shelter for the other from excessive heat—but where the fruit is desired

* In an essay read before the Horticultural Society of Charleston, by Judge William Johnson, he remarked, "a rich sandy loam is what the foreign gardener's recommend; but I should say, that the plant would succeed on any soil, properly tempered to its habits, and I am well satisfied, that in the efforts that are made to bring it to perfection, we oftener make the soil too rich, than leave it too poor. Hence, so many beds disappoint the expectations of the zealous cultivator, by giving him abundance of large leaves, but very little fruit. There is a medium which it is difficult to describe, but which seems indispensable to success with the strawberry. A natural tact, or a few experiments will, however, be sure to make us masters of it in a year or two.

"It is impossible to lay down any precise rule on this subject, although an all-important consideration in the culture of this article. Much must depend upon the observations of the cultivator, and perhaps it may be enough here to say, and is certainly as much as one can venture to say, that land which will produce a crop of corn, of twenty to twenty-five bushels to the acre, will produce a good crop of strawberries."

of the largest possible size, the plants must be kept distinct, and at the distance of one foot asunder, and the runners should be cut off as fast as they appear.

751. "By some persons, it is recommended to make plantations in the autumn, as before stated, and to keep them divested of all runners, till after the maturity of the fruit the ensuing season.

752. "As beds of strawberries generally *want renewing every two or three years*, it will be necessary, in forming the new beds, to select the plants, in the proportion of nine bearing plants to one barren; and in order to do this with certainty, it will be best to *mark them when in fruit*. If, however, your beds are not encumbered with a superfluous number of *barren plants*, this precaution will not be *indispensably necessary;* though it is *generally requisite* with the varieties of hautbois, the red Chili, pine apple, and some others, which are apt to produce a great proportion of barren plants—and even, without proper attention, beds of these, and of some other kinds, will become almost totally unproductive.

753. "I will now proceed to describe some of the varieties.

"*English red hautbois.*—This is musk flavoured, and very fine. It is very apt to be overrun with male plants, in which case, new beds ought to be made when in fruit; in making which, they should be planted in the proportion of ten fruit bearing, or female plants, to one barren, or male plant; and beds thus formed, will produce so abundantly, as amply to compensate for the labour bestowed. If preferred, the plants can be carefully marked when in fruit, and be transplanted afterwards.

754. "*Red Chili*—This is a conical shaped fruit, with a neck between it and the hull, from which it is consequently detached with ease. It is exceedingly productive, and is raised in great quantities for the market of New-York; it is inferior, however, in flavour to the hautbois, and many others.

755. "*Pine apple, or Carolina.*—This is a native of our country, and is the parent of nineteen known varieties, among which are Keene's imperial, Keene's large seedling, and many others of the largest size. It is distinguished by its large and vigorous foliage, and fine flavoured fruit; but it is subject to be overrun with male plants; but, by pursuing the same course as prescribed for the hautbois, this may be successfully surmounted.

756. "*Red alpine, monthly, or everbearing.*—It is no uncom-

mon thing to gather fruit of this kind, when the autumn is mild, in the open air, at Christmas. In size and flavour good, but inferior to the red hautbois, and produces fruit throughout the season.

757. "*Keene's imperial.*—One of the *largest* and *most noted English varieties;* fruit fine flavoured, and well worthy of cultivation. So much admired was this fruit, on its first appearance in England, that the plants were sold at one guinea each."

758. *Hovey's seedling.*—From the "*Boston Courier,*" of June 1840.—"A new variety of this strawberry, which originated in 1835, is now offered to the public, after the experiment of three years, has confirmed its superiority over every other variety cultivated in this country. It belongs to the class denominated *pine strawberry,* and is scientifically described in the Magazine of Horticulture. The same work says, "this strawberry was first exhibited at the Massachusetts Horticultural Society rooms, in 1838; and again in 1839, and also the present year; and each season obtained the Society's premium, although in competition with the Methven, Keene's seedling, Downton, &c. Gentlemen well acquainted with all the other varieties cultivated in this country, have seen the bed in full bearing, and they unhesitatingly pronounce it to be the largest, handsomest, best flavoured, most productive, and hardy variety they have ever seen. The Keene's seedling, is the strawberry now almost universally cultivated in England; and those who have been the most successful cultivators of that variety, in this country, have not been able to obtain such specimens as were exhibited of Hovey's seedling, at the rooms of the Massachusetts Horticultural Society, on Saturday, June 13th, 1840."

STRAWBERRY CULTURE FOR MARKET.

759. The following article over the signature of a *Southern Traveller,* is taken from the Charleston Courier.

"If the market gardeners near Charleston, will sit down and calculate the money to be made by an acre of strawberries, if sold at twenty five cents per quart, they will perceive the advantage of this article, when cultivated with the plough.

"After the plants have spread fully, the alley to be kept clear of grass, will not exceed eighteen inches in width. A very few turns of the plough will serve to keep this small space clear of weeds and grass, and in excellent tilth.

"It was after a very careful examination into facts, on the spot in 1836, that the following account of the culture of the strawberry plant near Baltimore was written. As our climate is a superior one for its growth, the writer does not hesitate to say, that from four hundred and fifty, to six hundred dollars, ought to be realized from every acre well cultivated near Charleston.

760. "The quantity of this delightful fruit, offered for sale in Philadelphia and Baltimore, must astonish every South Carolinian, who ventures into the markets of those cities; and the universal and continued consumption of them as a *desert*, during the whole season they are offered for sale, will bear me out in the assertion, that if introduced in Charleston, no article will insure a more profitable return, for the labour bestowed upon it. We have, in addition, advantages arising from our climate, which will enable you to get your return, at least one year sooner than the cultivators for market can in places further north.

761. "I would observe, that having cultivated the strawberry myself with great success for many years near Charleston, I am enabled to state, that *you may safely calculate* on at least, from thirty to fifty seedling plants, the second year, from every mother plant you set out, before winter fairly sets in, if due attention is paid to their preservation during the cold weather, *where planted very late.*

762. "*The plants ought to be set out in September;* yet when set out in October, I have never known a tolerable crop to fail. Early in spring is equally a good time to secure the production of the young plants, for setting out in September following. In 1833, from nine plants carried a distance of two hundred and fifty miles, in a basket, and set out in April, three hundred and eighty seedling plants were produced, which gave me, in the following May, some very good pickings, with the addition of upwards of five thousand plants to complete the beds.

CULTURE.

763. "*The most profitable way of cultivating the strawberry,* is in rows, two feet and a half to three feet apart, the plants being planted not nearer than nine inches asunder in the rows.

"They ought to be set out, if possible, after a good rain, in September or October. The best soil is a rich, light, black loam. If the ground is poor, the fruit will be small, and the

produce scanty. But from well manured ground, the cultivators at the North assure me, that they gather not less than one hundred quarts per day from each acre, during the season.—You may be assured the return in Carolina, in good seasons, will be fully as great.

764. "*The best manure* is of course, that which is old and well rotted; (see paragraphs 26 and 27, and note to paragraph 747,) but fresh stable manure applied to the old plants, on giving them a complete dressing, as the winter sets in, is said to be highly beneficial.

"When a sufficiency of young plants have been secured, to keep up the stock, the runners ought not to be allowed to stand, nor ought the plants ever to be suffered to straggle out of the rows, which when in full growth, will be full sixteen to eighteen inches wide.

765. "As the season advances, towards crop time, preparations are made *to keep the fruit off the ground.* In the neighbourhood of Charleston, I know of nothing so convenient, or so cheap, as *rice chaff;* they have nothing equal to it at the North, and I recommend to you most earnestly to keep this in mind; for on the clean, sound, and delicate state of your fruit, when brought to market, will your profit greatly depend. Rice chaff ought, therefore, to be laid abundantly around all the plants, so as to keep the fruit out of the earth entirely, and thus prevent its being bruised in picking, or destroyed by washing, in preparing it for the table.

"From the width of the rows, it is scarcely necessary to say, that the strawberry thus planted, may be cultivated almost entirely by the plough, or common cultivator, with very little aid from the hoe.

GATHERING.

766. "Children from ten to fourteen years of age, are generally employed to gather in the fruit. They pick from five to eight quarts per hour. One of my informants, a market gardener, assured me, he himself could pick twelve quarts an hour, but that children could not be depended upon for more than six. He had only one acre in strawberries; but was preparing to set out more. He had from this acre, sent to market the last summer, on an average, one hundred quarts per day, for several weeks, and the rows were still full of large fruit when I saw them.

767. "Mr. Sommerville, a most intelligent and success-

ful cultivator, in the vicinity of Baltimore, has ten acres in strawberries, from which he sent as far as twelve hundred quarts a day.

TRANSPORTING TO MARKET.

768. "*The most approved mode of sending them to market*, is either in small baskets, holding each a quart, and those standing side by side, in boxes resembling a set of drawers; or they are put up in boxes of a similar shape, of four to five feet in length, three feet wide, and six or seven inches deep, divided into small squares by partitions, each square containing about a quart. In this mode, the large quantity produced by MR. SOMMERVILLE, is disposed of daily without loss, while many bushels were seen in large baskets, selling at less than half price, from being bruised by their own weight, and in a state of fermentation."

ART. LXXXVI.—AMERICAN WALNUT.

769. There are a number of varieties, those of most import in the South, are the *black walnut*, *pecan nut*, and *hickory*, *or white walnut.*

The first and third are too well known to need any description, the second is an oval shaped fruit of great delicacy, and much used for the table. All of them easily accommodate themselves to almost every kind of soil, but a high and dry soil is to be preferred. They are propagated by seeds, or by grafting, and there is no doubt that all the commoner walnuts, throughout our country, may by this process, be changed to trees of the most valuable kinds.

The black walnut being a fast grower, would when planted near each other from seed, make an excellent hedge.

ART. LXXXVII.—FIGS.

770. "This tree delights in rich, sandy, and gravelly soils, but no tree will accommodate itself to a greater diversity of soil. If, however, the ground selected is too moist, the fruit is less flavoured.

"It requires a warm exposition, for it has been noticed, that the more it received the operation of the sun's rays, the more sugary and high flavoured have been its fruit.

771. "*It is easily increased* by cuttings, layers, and suckers. The fig tree should, however, be kept free from suckers, as these draw off the nourishment in a great degree from the main tree, thereby causing the fruit to be very small, and often immature."—*Prince.*

772. "The cuttings will succeed best in this climate, when planted in the month of February. Those, however, that have been taken from the tree at an earlier period, will succeed very well when planted a month later.

773. "*It may be successfully inoculated.*—As the tree, however, grows readily from cuttings, a resort to this method is only desirable, when we have stalks of an inferior kind, the inoculations growing so rapidly, that there is usually a saving of a year by this method. The tree grows readily from shoots, but I have found, from many years experience, that cuttings succeed better, and grow more rapidly. A limb is laid horizontally, covered by seven or eight inches of earth; a branch is suffered to project from the earth, which forms the future tree, whilst the parts under the surface are formed into roots. It usually commences bearing the second year.

774. "In an experiment I made on the black, blue, white, and brown figs, I am inclined to think that by manuring them, an early crop of figs may be obtained from all these varieties, although some kinds produce less abundantly than others.

"I regard the fig as one of the most valuable, among the fruits cultivated in the maritime districts of South-Carolina. It is wholesome and delicious. The tree is of easy growth, does not take up much room, is seldom injured by frosts, bears from one to three crops in a season, and there are so many varieties, that with a little care, good fruit may be obtained from June, till the frosts of November."—*Bachman.*

Art. LXXXVIII.—GRAPES.

775. "The grape delights in a deep, light soil, where the roots can penetrate to a great depth, with perfect facility. It flourishes in gravelly soils, where the land is rich, and not heavy, and will even scarcely fail to grow vigorously in any land, except a hard clay. The ground should, however, be made perfectly mellow, to the depth of two feet, and if not naturally rich, should be made so, with old well rotted stable, or cow yard manure, the latter always preferable. The situation should have a southern aspect; an eastern aspect is found to render the fruit and foliage most liable to mildew, and a south west exposure is found to be preferable to all others.

776. "*Grapes may be propagated* from cuttings, layers, or seeds; the former, however, is the customary mode both in France, and elsewhere. For this purpose, you should select well ripened wood, of the growth of the previous season, and form it into lengths, containing from three to four joints—as to their exact length, it is of no consequence—but the *lower end, or base* of the cutting, should be *just below a joint.*

"You then proceed to plant them in the places designed for them, which may either be in nursery rows, whence they can be transplanted afterwards, to the places finally allotted to them, or at once into their permanent situations."—*Prince.*

77. Cobbett, *the friend of the English cottager*, gives the following *simple* and *plain*, but *valuable* directions, for propagating and cultivating the grape vine.

"The grape vine is raised from cuttings or from layers. As to the first, you cut off, as early as the ground is open in spring, (*with us, December is the proper month,*) a piece of the *last year's wood;* that is to say, a piece of a shoot, which grew during the last summer. This cutting should, if convenient, have an inch or two of the former year's wood at the bottom of it; but, this is by no means absolutely necessary. The cutting should have *four or five buds or joints.* Make the ground rich, move it deep, and make it fine. Then put in the cutting with a setting stick, (see paragraph 111,) leaving only two buds, or joints, above ground; fasten the cutting well in the ground; and then, as to keeping it cool and moist, the ground around the plant, should be covered with leaves of trees, or muck, or something that will keep the ground cool during the hot and dry weather.

778. "*Layers from grape vines* are obtained with great ease.

You have only to lay a shoot, or limb, however young or old, upon the ground, and cover any part of it with earth, it will strike out roots the first summer, and will become a vine, to be carried and planted in any other place.

779. "But observe, *vines do not transplant well.* For this reason, both cuttings and layers, if intended to be removed, are usually *set*, or layered, in flower pots, out of which they are turned, with the ball of earth along with them, into the earth where they are intended to grow, and produce their fruit.

780. Look now at the annexed plate, which exhibits in all its dimensions, the cutting become a plant. Fig. 1.

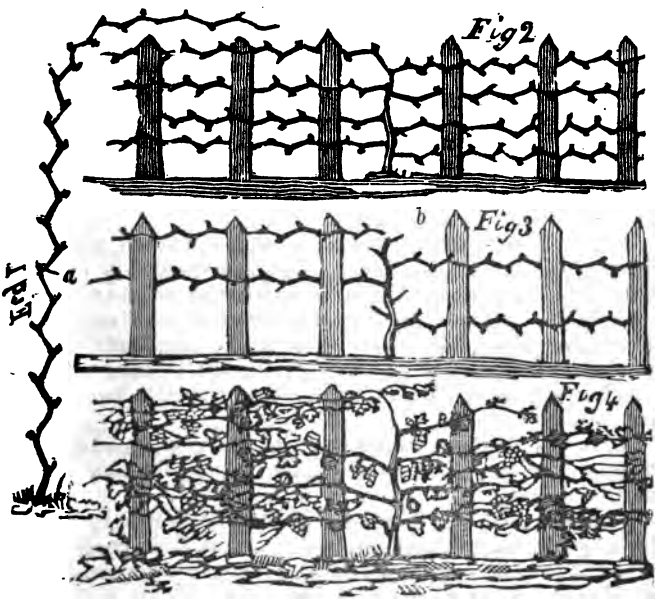


Fig. 2.—The first year of its being a vine after the leaves are off, and before pruning.

Fig. 3.—The same year's vine pruned in winter, and,

Fig. 4.—The vine, in the next summer, with shoots, leaves, and grapes.

"Having measured your distances, put in a cutting at each place where there is to be a vine. You are to leave two

joints or buds out of ground. From these will come two shoots perhaps; and, if two come, rub off the top one and leave the bottom one, and, in winter, cut off the bit of dead wood, which will, in this case, stand above the bottom shoot. Choose, however, *the upper one* to remain, if the lower one be very weak. Or a better way is, to put in two or three cuttings, within an inch or two of each other, leaving only one bud to each, out of the ground, and taking away, in the fall, the cuttings that send up the weakest shoots. The object is to get one good shoot, coming out as near to the ground as possible. This shoot you tie to an upright stick, letting it grow its full length. When winter comes, cut this down to the bud nearest to the ground.

781. "The next year another, and a much better and stronger shoot will come out; and when the leaves are off, in the fall, this shoot will be eight or ten feet long, having been tied to a stake as it rose, and will present what is described in Fig. 1. You must make your trellis; that is put in your upright posts, to tie the next summer's shoots to. You will want (see Fig. 2,) eight shoots to come out, to run horizontally, to be tied to these bars.

782. "You must now, then, *in winter*, cut off your vine, leaving eight buds, or joints. You see there is a mark for this cut, at *a*, Fig. 1. During summer eight shoots will come, and as they proceed on, they must be tied with matting, or something soft, to the bars. The whole vine, both ways included, is supposed to go sixteen feet; but, if your tillage be good, it will go much further, and then the ends must be cut off in winter.

783. "Now, then, winter presents you your vine as in Fig. 2; and now you must prune, which is the all-important part of the business.

"Observe, and bear in mind, that little or no fruit ever comes on a grape vine, except on young shoots that come out of wood of the last year. All the four last year's shoots you find in Fig. 2, would send out bearers; but, if you suffer that, you will have a great parcel of small wood, and little or no fruit next year. Therefore, cut off four of the last year's shoots, as at *b*, (Fig. 3,) leaving only one bud.

"The four other shoots will send out a shoot from every one of their buds, and, if the vine be strong, there will be two bunches of grapes on each of these young shoots; and, as the last year's shoots are supposed to be eight feet long, and

as there generally is a bud at, or about, every half foot, every last year's shoot will produce thirty-two bunches of grapes; every vine one hundred and twenty-eight bunches. However, suppose you have only a fifth part of what you might have, are they not worth a great deal more than the annual trouble, which is, indeed very little.

"*Fig.* 4, *shows a vine in summer.*—You see the four shoots bearing, and four other shoots coming on for the next year, from the butts left at the winter pruning, as at *b*.

"These four latter, you are to tie to the posts as they advance on during the summer. When winter comes again, you are to cut off the four shoots that sent out the bearers during the summer, and leave the four that grew out of the butts. Cut the four old shoots that have borne, so as to leave but one bud at the butt. And they will then be sending out wood, while the other four will be sending out fruit. And thus you go on year after year for your life; for as to the vine it will, if well treated, out live you and your children, to the third and even thirtieth generation.

"I think they say that the vine at Hampton Court, was planted in the reign of King William.

784. "*During the summer*, there are two things to be observed, as to pruning. Each of the last year's shoots has thirty-two buds, and, of course, it sends out thirty-two shoots, with the grapes on them, for the grapes come out of the two first fair buds of these shoots. So that here would be an enormous quantity of wood, if it were all left till the end of summer.—But this must not be. When the grapes get as big as peas, cut off the green shoots that bare them, at two buds distance from the fruit. This is necessary to clear the vine of confusion of branches, and also to keep the sap back for the supply of the fruit. These new shoots that have the bunches on, must now be tied to the trellis, or else the wind would tare them off.

785. "*The other thing is*, to take care to keep nicely tied to the bars, the shoots that are to send forth bearers the next year; and, if you observe any little side shoots coming out of them, to crop these off as soon as they appear, leaving nothing but the clear clean shoot.

786. "It may be remarked, that the butt as at *b*, when it is cut off the next time, will be longer by a bud, That will be so; but, by the third year the vine will be so strong, that you may safely cut the shoots back to within six inches of

the main trunk, leaving the new shoots to come out of it where they will; taking care to let but one grow for the summer.

787. "If shoots start out of the main trunk irregularly, rub them off as soon as they appear, and never suffer your vine to have any more than its regular number of shoots.

788. "*As to the cultivation of the ground*, the ground should not only be deeply dug in the fall; but with a fork, two or three times during the summer. The ground should be manured every fall, with good rich manure. Blood of any kind is excellent for vines. But, in a word, the tillage and the manuring cannot be too good."

789. The dust and dirt of roads is greatly esteemed for manuring vines. The vine growers of France, form composts of earths, leaves, weeds, cleaning of ditches, river, and pond mud, horn shavings, old rags, hair, shavings of leather, and old bones broken up into small pieces; these ingredients should be thrown into a heap, and frequently turned a year or so before used.

790. MR. HOARE, in his able treatise on the vine, observes: "*To transplant a vine;* the best time of the year, is *immediately after the fall of the leaf;* the longer its removal is postponed after this period, the later in the ensuing spring does it begin to vegetate."

791. "*The Isabella or Carolina grape*, which of all others, is most liable to rot, should be trained on a horizontal arbor, in order that the roots may be shaded, which, it is said, prevents the roots from rotting. This grape is said to be a native of South-Carolina, it is called the Isabella grape, in honour of MRS. ISABELLA GIBBS, the lady of GEORGE GIBBS, ESQ., of St. Augustine, who introduced it into the State of New-York. It is a dark purple fruit, oval form, large size, and juicy; is very vigorous, and yields abundantly; single vines have been known to produce eight and ten bushels each.

792. *White scuppernong, or Roanoke grape.*—"The most perfect account of this grape, that I recollect to have seen, is from the pen of JAMES G. HALL, ESQ., of Currituck, North-Carolina, and published in Vol. 9, No. 18, of the American Farmer; and as this grape is more particularly cultivated in that region of country, I give some remarks, extracted from his communication, in preference to my own. This grape (he states,) is a native of the North Eastern part of North Carolina, and grows spontaneously on Roanoke island and its

vicinity, and formerly was called the Roanoke grape; but as its excellence as a wine grape, was first tested at Scuppernong, the grape has obtained that name abroad. The particular excellence of it is the richness of the grape, and the longevity and hardiness of the vine. The vines in North-Carolina are never pruned, and receive little attention otherwise. If they were pruned, and properly attended to, he considers that a far greater abundance of fruit would be produced. The grape is round, white, very sweet, and of a good size; the latter circumstance depending much on the vigour of the vine. They are pleasant for the table, and contain a large quantity of saccharine matter, so happily united with the acids of the fruit, as to render them finely flavoured for the palate, and highly prized for wine. It is the opinion of many intelligent persons, that the Scuppernong or Roanoke wine, has a richness, and a peculiarly fine flavour, unknown in the foreign wines which reach this country.

"The shoots of this vine are very peculiar, on account of the greyish appearance of the bark, and for their delicacy and smallness; but they are produced in such profusion, and are so thickly covered with foliage, that where the vine is left without pruning, the fruit is almost totally obscured from the sun. The leaves are smooth, light green, and very shining, not lobed, but regularly indented; they are small, compared with those of most other vines, seldom exceeding two and a half to three inches in the greatest diameter, and in fact, it may be said, that the whole aspect of the plant is of a peculiar character, bearing no resemblance to any other species.—The blossoms expand in June, and later than those of any other vine I am acquainted with, the berries, which ripened with me the past season for the first time, were as round as a bullet, of a light green hue, even when at full maturity, and of the size of the largest chasselas; the skin is very tough, and rather thick, the seeds green; the juice is abundant, very sweet and pleasant, and of peculiar flavour, and when ripe entirely free from pulp. It is a pleasant fruit for the table, and judging from the skin, I should suppose it could be kept a long time in perfection for eating. The clusters are never large, but very numerously and separately set, which greatly aids their perfect maturity.

793. "It is a dicecous species, and in order to obtain crops, it is necessary to have vines of both sexes; from inattention to pursuing this course, many persons have failed in obtaining

crops, and have, therefore, asserted that their vines were barren, without taking sufficient pains to examine into the cause.

"Some persons have claimed, both this and the Isabella as foreign varieties; hereafter, perhaps we may hear of foreigners claiming our lakes, and our mountains, which they might do with quite as much justice."—*Prince's Treatise on the Vine.*

794. Extract from a letter to the Compiler, from a respectable physician of Wilmington, North-Carolina. "It is true that for some years, I have had in my town garden, a couple of vines—their product has been small; perhaps from the low and damp situation in which they grow, as well as from the arbor being too much crowded. I have often conversed with friends on the subject; most of whom think the vines do better without pruning; though that fact was controverted by one of the most successful cultivators amongst them, now dead.

"One vine with a good substantial arbor or frame, will cover nearly, if not more than a quarter of an acre of ground. The situation should be open to sun and wind; a dry sandy, or gravelly soil most suitable.

"Some surround the body of the vine with a common square pen, (as large as fence rails will allow,) two or three feet high, and fill in with corn stalks, shucks, &c., as well to afford some manure, as to shelter from the sun the roots.

"The vines, if to be pruned, may be cut in July, and early in August without bleeding. This (at the suggestion of my deceased friend,) I have verified, and thought it a remarkable fact.

"The product of a vine well located, and trained on a sufficiently extensive frame, will yield incredible quantities of grapes; it is said between one and two hundred bushels."

ART. LXXXIX.—ORANGES.

795. This fruit with us is well known as a desert, and a grateful relish to the sick; it is also much used in confectionary, both ripe and when green. In perfumery, the orange is used to form various perfumes and pommades, and the flowers distilled, produce orange flower water, used in cooking, medicine, and as a perfume. The usual mode with us, is to

put the flowers into bottles, filled with three fourths good old brandy. It is then called *orange flower brandy*, and is used for the same purposes that the orange flower water is—like wine, the older it gets the better it is.

796. *The varieties are very numerous*, but the principal ones grown in the Southern States, are the sweet, or Chinese, and the Seville, or bitter sweet. The trees (north of Georgia,) when young, should be protected with matting during the winter months.

The light sandy soils produce the best oranges, these have thin skins, crowded with juice, and are very luscious; the dividing integuments of the plugs are thin and tender, and when fully ripe, they partake of a slight, but fine musky flavour.

The orange tree is so averse to much, and particularly fresh manure, that penning, or fatening cattle, or horses among them, the passage of foul gutters near them, or the frequent use of the wash tub under their shade, soon produces disease and death; consequently low rich soils, and abundant manuring, are not favourable to the growth or quality of the sweet orange.

It is propagated generally from seeds, and by budding.

Art. XC.—POMEGRANATES.

797. "*This is one of the oldest fruit bearing trees*, with which history has made us acquainted, and is one of the most frequently mentioned in Sacred Writ. In the poetic language of Solomon, we have it described as a fruit from which a choice wine was made in his time.

He says, "I would cause thee to drink of *spiced wine*, of the fruit of my pomegranates."

798. "The great Lord Bacon recommends the wine of the sweet pomegranate, for pulmonary complaints, and in default of wine, the newly expressed juice. The rind of the fruit, and the flowers, are the parts directed for medicinal purposes; they are both powerful astringents, and have long been successfully employed as such, both externally and internally, for gargles, and in diarrhœas, &c.

799. "*The sub-acid-fruited, or single flowering sort*, is the best for cultivation as a fruit bearing tree. It is propagated by seeds, cuttings, suckers, layers, grafting, and budding; the last mode is preferable.

800. "*It delights in a strong, rich, loamy soil;* the flowers proceed from the extremities of the branches, produced the same year, single, or three or four together; frequently one of the largest terminates the branch, and immediately under that are two or three smaller buds, which continue a succession of flowers for some months, generally from June to September.

801. "*The fruit ripens in October*, and in a green house, will hang on the trees till the spring or summer following.—In Languedoc and some parts of Italy, it is used as a hedge plant.

802. *Pruning.*—"As already mentioned, the flowers of this tree always proceed from the extremity of the branches, produced the same year: hence, all weak branches of the former year should be cut out, and the stronger shortened, in order to obtain new shoots in every part of the tree. "The season for winter pruning, MILLER says, is about October, for if left till spring before they are pruned, they seldom put out their shoots so early. The double and other varieties, cultivated for the sake of their flowers, should be pruned in the same manner."—*Loudon.*

ART. XCI.—OLIVES.

803. "*The olive is a low branchy evergreen tree*, rising from twenty to thirty feet, with stiff, narrow, bluish green leaves. The flowers are produced in small auxiliary bunches, from wood of the former year, and appear in June, July, and August. The fruit is a berried drupe, of an oblong, spheroidal form, hardish thick flesh, of a yellowish green colour, but turning black when ripe.

804. "The tree is supposed to be originally from Greece; but is now naturalized in the South of France, Italy, and Spain, where it has been extensively cultivated for an unknown length of time for the oil expressed from its fruit.

The tree attains an incredible age.

(NOTE.—It grows luxuriantly in the open air, in and near Charleston, and produces excellent fruit.)

USE.

805. "*At the desert*, and frequently also during dinner, unripe olives appear as a pickle; which, though to those who taste it for the first time, it appears somewhat harsh, yet it soon becomes extremely grateful, and is said to promote digestion, and create an appetite.

806. "*Pickled olives are prepared* by steeping in an alkaline lessive, to extract a part of their bitter; they are next washed in pure water, and afterwards preserved in salt and water, to which an aromatic, as fennel, &c., is sometimes added.

807. "*The ripe olive*, pressed and washed with hot water, furnishes, when skinned, the well known condiment and corrective, salad oil, employed both in food and medicine.

PROPAGATION AND PRUNING.

808. "By seeds, cuttings, layers, suckers, and inoculation. The last mode is adopted, where the cultnre of the olive is conducted with care; but the *olivettes*, or olive plantations, are generally furnished from suckers, which arise abundantly from the roots of old trees.

809. "*The object in pruning*, is to have a regular distribution of wood of the former year, from the axils of the leaves, from which the flowers spring out. When shoots of three or more years, are shortened for this purpose, they do not produce blossoms; but wood of the preceding or current year may be shortened, and the shoots proceeding from them will produce blossoms in due course."—*Ency. Gardener, by Loudon.*

ART. XCII.—BREEDING CATTLE.

810. "*The objects to be kept in view*, in breeding cattle, are forms well adapted for fattening, for producing milk, or for labour. These three objects have each of them engaged the

attention of British agriculturists; but experience has not hitherto justified the expectation, that has been entertained, of combining all these desirable properties, in an eminent degree, in the same race.

811. "*That form which indicates the property of yielding the most milk*, differs materially from that which we know from experience, to be combined with early maturity, and the most valuable carcass; and the breeds, which are understood to give the greatest weight of meat, for the food they consume, and to contain the least proportion of offal, are not those which possess, in the highest degree, the strength and activity required in the beasts of labour.

812. "*A disposition to fatten*, and a tendency to yield a large quantity of milk, cannot be united. The form of the animal most remarkable for the first, is very different from that of the other; in place of being flat in the sides, and big in the belly, as all great milkers are, it is high sided, and light bellied; in a word, the body of the animal well adapted to fatten, is barrel formed, while that of the milker is widest downwards. It is not probable, therefore, that the properties of two breeds of cattle, so opposite in form, and general appearance, can ever be united in the same animal.

813. "*To improve the form*, rather than to enlarge the size, in almost every case, ought to be the grand object of improvement. Size must be ever determined by the abundance or scarcity of food, and every attempt to enlarge it beyond that standard, must prove unsuccessful, and for a time, destructive to the thriving of the animals, and the interest of the owners. It is certain that animals, too large or too small, will alike approach to that profitable size, which is best adapted to their pastures; but the large animal becomes unhealthy, and degenerates in form, and in all its valuable properties; whereas the small one, while it increases in size, improves in every respect.

814. "*The age at which bulls should begin to be employed*, and the number of seasons they should be allowed to serve, as well as the age at which the females should begin to breed, are points regarding which practice is by no means uniform. In the midland counties, (of England,) the bulls are pretty commonly allowed to leap while yearlings; and if good stock getters, are kept on as long as they will do business, perhaps till they are ten or twelve years old. In other places, they are employed only three seasons, for the first time at two years old.

815. "*The females*, in many instances, bring their first calf at the age of two years; but more commonly, perhaps, not till they are a year older; and in some of the districts, where, owing to a want of proper nourishment in their infancy, they are later in coming to their full growth, the females do not often become mothers till they are about four years old.

816. "*The period of gestation with cows*, has been found upon an average of a great number of experiments, to be about forty weeks."—*Loudon's Agriculture.*

817. MOWBRAY says, "the period of gestation in the cow, according to an average, is two hundred and eighty seven days, or forty one weeks, with a bull calf; a cow calf comes a week sooner."

818. *The most desirable period for putting cows to the bull* is midsummer, in order that they may be dropped in spring, and have the whole of the grass season before them. When no regular system is followed, and cows are sent to the bull merely because they are in heat, calves will be dropped at all seasons; but spring is probably the most advantageous time; as the calves having all the grass season before them, become sufficiently strong for enduring the change to a less agreeable food, in the ensuing winter. A calf newly weaned, seldom thrives well during that period, unless it is pampered with better food, than usually falls to the share of young animals. By midsummer the cows are readier to take the bull, than at any other season, and will bring calves in proper time. If a cow goes till after May, before she calves, the calf will be too weak in the winter following; and the dam will not be so ready to take the bull again, but will often grow barren.

819. *It is not always the best milch cow*, that has the best calf, even though the external circumstances should be similar; and *vice versâ*, a sorry cow may have a good calf. These remarks apply to this breed, as well as to others. The immediate progeny of a good milker, may be an indifferent milch cow, but in the second remove, the good milking quality of the grandam returns. This has often been observed, and without any of the causes being imputable to the size.

820. *Castration is performed*, both on male and female calves, when neither are intended for pro-creation. On cow calves, however, it is generally omitted.

821. *The time of performing the operation of castration* in horned cattle, as in all kinds of live stock, is while the animals are yet very young, and just so strong as to endure this severe

operation, without any great danger of its proving fatal.—The males are cut commonly when about a month old, and the females at the age of from one to three months; but in Galloway, where more heifers are spayed, than perhaps in all the island besides, this is seldom done till they are about a year old.—*Ency. Agr. Loudon.*

Art. XCIII.—CALVES.

822. *The best calves for bringing up, are* those calved early in the season, or before June.

823. "*At the setting in of cold nights* in autumn, calves must be nightly housed; and not to be out early in the morning, nor late in the evening. And as the pinching cold of winter, will be extremely detrimental to them, they should be kept warm in their house, well supplied with water, and let out only on the warmest days.

824. "*A great deal of care is necessary,* to bring them through the first winter, which is the most dangerous period of their lives. They will acquire so much strength during the following summer, that they will have nothing to fear from the cold of a second winter."—*Buffon.*

FATTENING CALVES.

825. "*The method most commonly employed* in fattening calves, is to allow them to suck; as by this method, the object is probably not only sooner, but more effectually attained, than by any other means. The period which is necessary for fattening calves in this way, must be different, according to circumstances, but it is generally from seven to nine weeks; however, in the dairy districts, where milk is considered a valuable article, scarcely half that time is allowed.

826. "*There is another method,* which is, to give them the milk to drink; and when that is done, it is given them morning and evening, warm from the cow, and the quantity increased according to their age and strength. In whatever way they may be managed, they should be kept in pens, in a close house, and well littered. The author of the *Synopsis of Husbandry* observes, that as it is necessary that the calves

should lie always quiet, in order that they may indulge in sleep at those times when they are not employed in sucking, it seems proper, that the calf house should be situated in the most retired part of the yard, and that the pens be kept as dark as possible. But notwithstanding this caution, the calves should by no means be suffered to lie too hot in the summer time, which would be apt to produce a sickness amongst them.

827. "*Calves suckled on their own dams* will, generally speaking, fatten in a shorter time, than those afterwards brought in to supply their places."—*Loudon.*

Art. XCIV.—OXEN.

828. *This very useful animal is easily broke* at any age, but the younger they are inured to light work, the more docile they will generally become. Some persons begin to work at two years old, but it should be only for very light operations, or you will retard the growth of your beasts, and perhaps injure their health.

829. *Their food* should be proportioned to their labour, for if over worked, or under fed, they will most certainly become diseased and sluggish. A working ox should always be in good condition, as in case of accident, he may be fit for the butcher.

830. *If an ox is well fed* on hay, oats, or turnips, he will plough four days in the week, but if he have only straw and roots not above three days. Oxen cannot work to advantage on straw alone; the most economical method is, to give them good oats, roots, and fodder, and they will go through their work with half the usual labour.

831. *If your oxen are worked in their yokes* in wet weather, their necks are very apt to get sore and galled; therefore, whenever thus used, the yokes should have a little tallow rubbed on the parts which lie upon their necks and also upon the bows.

832. If your oxen are galled or bruised, let the parts be washed with the solution recommended in Art. 114, paragraph 1142.

ART. XCV.—MILCH COWS.

833. *The milch cow*, it is said, is in her prime at five years old, and with good care and attention, will continue in good milking state, until she is ten or twelve years of age, though some cows exhibit marks of old age much earlier than others.

834. "*The provision of food*, (observes MOWBRAY,) must be looked upon as the prime concern in the dairy business, for such a constant daily draught upon the animal juices cannot be answered, but by aid of the most ample supply, even to satiety, of nutritious and succulent victuals; not that, according to the absurd notions of many persons, keep, regulates, and equalizes milking, be the breed whatever it may, since in some breeds, the keep turns to milk, in others to beef; but because the truest and largest milker, will very soon loose that precious faculty, without proportionate, that is to say, high feeding.

835. "*Keep short and meanly*, and your milk and butter produce, will be in exact proportion, and the cow, when dry, emaciated and of little worth.

"Another great object for our crack cow master, and lady of the snug rural mansion, is to have milk, cream, and butter, in a generous abundance and high quality, throughout the winter, as well as the summer season; and of these, if they will take care enough, they shall not fail. The method is, by contriving to have a fresh milker in the winter, with an ample store of the best provisions for the season." (See paragraph 841.)

836. "*Cows* (says MR. FESSENDEN,) *should be milked* regularly morning and evening, and as nearly as may be at the same time. At six in the morning, and six at night, is a good general rule, as the times of milking will be *equi distant* from each other. But if they are milked three times a day, as DR. ANDERSON recommended, the times may be five, one, and (as late as convenient at evening.) He asserted that if cows were full fed, they will give half as much again, if milked three times, as if only twice. At the same time it would prevent a great distension of their bags, to which the best cows are liable.

837. "*The cow which is desired to remain in perfection*, either for milking or breeding, should not be exhausted by drawing her milk, too long after she becomes heavy with calf.

It is paying too dear for a present supply of milk. She should be suffered to go dry at least two months before calving.—But some persons consider ten days, or a fortnight, amply sufficient.

838. "*Keep no more cows than you can well keep;* one cow well fed, will produce as much milk as two indifferently treated, and more butter; and if the cow be wintered badly, she will rarely recover, during the succeeding summer, so as to become profitable to the feeder."

839. "*Great economy*, (observes a writer in the Southern Agriculturist, over the signature of ASHLEY,) can be exercised in preparing their food. All your cobs may be boiled, and the water from the same, mixed with your boiled peas, or corn—into this I would throw a small quantity of hay, or blades, chopped up fine. Cows thus fed, will produce three times the amount, which they would otherwise do."

840. *Milch cows should be kept* where they can have *free access to water at all times*, winter and summer.

ART. XCVI.—PLAN FOR KEEPING A MILCH COW WELL FED, THE WHOLE YEAR, &c.

841. *It is the usual complaint*, with most of the planters and farmers in the low country, that they cannot make butter enough for their families, during the winter months; and many of them, that they barely have a sufficiency of milk; and some, that their cows invariably go dry on the approach of winter, and that they do not get milk enough for their coffee. Now, this is unfortunately too true! But ask them the reason of it, and some will tell you, that they *really do not know;* that their cows are fed *every night* with *peas and turnips, from November until grass springs;* and others, that they *only know* that *such is the fact*, but cannot tell why.

842. Now it has just been stated in paragraph 837, that a cow well attended to, and supplied with a *sufficient quantity of good food and water*, can be milked to within a few days of her calving, and then again as soon as her calf is a few days old—therefore, it cannot be the fault of the cow. But let me

at once tell you why it is, that in most cases, they get so little milk from their cows in winter, and early spring; and in some that their cows go dry so soon.

843. *The method pursued* by most of these men, is simply this:—their cows are never fed with the turnips and peas, until they have no longer any grass, shooks, or in fact any thing in the last year's fields that they can pick up; (for into these they are always turned, as soon after the crop is harvested as possible,) but, as soon as a planter removes to his plantation, (which is generally the middle or towards the latter end of November,) he selects one, two, or three cows, which *he orders* to be fed every night, with a small quantity of cow peas in the haums, and a few ruta baga turnips; the quantity that each cow gets, is perhaps a peck of this feed.

They are then (after being milked,) put into the pen, with the rest of the stock cattle for the night. In the morning they are again milked, (*but not again fed,*) and then turned out with the general stock, to gather what they can in the woods, or old fields, until evening—no! not until evening, for you will generally see the poor creatures, about two or three o'clock, returning in anxious expectation of their evening pittance, (as nothing is to be got by running over the fields any longer,) bellowing around the pen, or place where they are fed, until they are again *fed, milked*, and penned for the night as before. This is what they call feeding, and taking care of milch cows! A little cow peas and turnips once a day in winter, to cows that have been exposed all the night previous in pens, perhaps knee deep with mire; suffering with cold, and may be rain; and wandering the live long day, (*in vain*, I almost said,) searching for a little food, to assist in satisfying the cravings of hunger, and are half famished, weak and tired with running about. Do *you* call this *taking care of cows?* Yes, most of our low country planters and farmers do; and expect too, with this treatment, they will make butter for their families, all through winter.

844. But enough of this *wretched management.* I will now proceed and show, how *a cow*, with a *little* care and trouble, (and what is there to be obtained without some trouble,) can be kept, fed (*and well fed too,*) from the produce of a task, or quarter of an acre of land, cultivated expressly for this purpose, and managed as hereafter directed. Thus, your cow will be abundantly supplied the year round, with good whole-

some and nutritious food; causing her to give a quantity of rich and delicious milk; which could not be obtained from four or five cows, managed and fed in the usual way.

845. First, then *the ground should be well manured*, (provided it is not already rich enough,) by having ten or twelve cart loads of old rotted manure spread over it broad cast, but if you can give it twenty or thirty loads, why, so much the better; after which let it be well turned up with the spade or plough; the former is decidedly the best, but the latter the most expeditious—the harrow should then be passed over it several times, to pulverise the lumps, and make the whole even and nice. Do this early in August, (say eighth or tenth,) after which procure some of the genuine ruta baga, or yellow Swedish turnip seed, and about the twelfth or fifteenth, let the ground be thrown up into little ridges, one foot high, and four feet apart; but of all things let them be straight, and at equal distance, all along from each other.

846. *But you must leave a small piece* on the north side of this quarter acre, five reet wide, and twenty feet long, to be reserved for sowing cabbage seeds on in October; if the ground is a square of one hundred and five feet, (which is exactly one quarter of an acre,) after leaving this piece for your seed bed, you will have twenty-five ridges or rows, of one hundred and five feet in length, besides a small piece next the side of the above slip, of five feet. Now, upon these ridges, with the hand dibble, (Fig. 3, Art. 49,) the teeth set nine inches apart, let the holes be made, and drop into each four or five seeds, and cover them carefully.

847. *As soon as the plants are three inches high*, let them be thinned out, and managed as directed in Art. 22, paragraphs 216 and 217; and if the land is good, and properly managed, you will have, about the middle of November, some thirty-three hundred turnips; these without tops or greens, should weigh, on an average, five pounds each, and at sixteen turnips, or eighty pounds a day, will keep your cow until the middle of May, or first of June.

848. As I have already said, these *turnip seeds* should be sown in August; now in October, let the slip of five feet which was directed to be left on the north side of the patch, (in paragraph 846,) be well dug up with the spade, and laid off into a flat bed, three feet wide, and fifteen or eighteen feet long; make little drills, eight inches apart cross wise, and sow one half the bed with genuine European, sugar loaf cab-

bage seed, and the other half with the same kind of drumhead cabbage seed. Should severe weather set in, strew a little straw between the rows of plants on the seed bed; this will protect them from injury in most cases.

849. *These plants are not to be transplanted* until February, when they must be put out on ridges, which are to be made between each row of ruta bagas; you must plant them so that when finished, you will have a row of ruta bagas, then a row of sugar loaves, then another row of ruta bagas, and then a row of drumheads, and so on throughout the piece.

Hoe often and tend well, and if your land is rich, (for without rich land, your labour will be lost,) you will have cabbages fit to cut about the middle of May, just when your ruta bagas are giving out.

850. *You will have* thirty-two and a half rows, and sixty-three cabbages in each row of sugar loaves, which should stand twenty inches apart on the ridges; and fifty-two drumheads standing twenty-four inches apart; this will give you nearly fifteen hundred heads of cabbages for your cow; but be careful that you keep up the supply, for these will not last your cow until the next year's crop of ruta bagas come in, but in March, and again in April and June, make small sowings in the old seed bed, (having it first well turned up with the spade,) of sugar loaves and early yorks; and as fast as you cut cabbages, plant cabbages, but do not put these plants on the ridges, from which you have just cut the sugar loaves and drumheads, but put them upon the ridges, from which the ruta bagas have been taken, of course having these old ridges first well turned up with the plough or spade.

In this way, the ridges on which you put out the sugar loaves and drum heads, (which were the first put out,) will be ready in August, to receive the seed of the next year's crop of ruta bagas, thus alternating the crops on each ridge every year.

If managed in this way, your cow will be supplied with an abundance of wholesome and nutricious food, and you will also have now and then, a good head of cabbage for your table.

851. *By all means, boil or steam your turnips;* first cutting them into several pieces; and if you have cow peas and cotton seed, (which most planters generally have,) add as much as you can spare to the daily mess, for they will contribute no little to the quantity and quality of the milk.

852. *The turnips are to be divested of all decay*—and of all dead or rotten leaves. The cabbages should be cut off the

stumps, and all dead or decayed leaves carefully picked off, and then chopped into several pieces, but not cooked—at least I never cooked them.

853. But the question may be asked, "will not these crops give an ill taste to milk and butter?" for answer, COBBETT, *the great friend of the ruta baga* says,—

"It is very certain, that the taste and smell of certain sorts of cattle food, will do this; for, in some parts of America, where the wild garlick, of which cows are very fond, and and which, like other bulbous rooted plants, springs before the grass, not only the milk and butter have a strong taste of garlic, but even the veal, when calves suck milk from such sources. None can be more common expressions, than in Philadelphia market, are those of *garlicky butter and garlicky veal.* I have distinctly tasted the *whiskey* in milk of cows fed on distiller's wash.

854. "*It is also certain*, that, if the cow eat *putrid* leaves of cabbages and turnips, the butter will be offensive; and the white turnip, which is at best, but a poor thing, and often half putrid, makes miserable butter.

855. "The large *cattle cabbage*, which when loaved hard, has a strong, and even an offensive smell, will give a bad taste and smell to milk and butter, whether there be putrid leaves or not. If you boil one of these rank cabbages, the water is extremely offensive to the smell.

856. "But I state upon positive and recent experience, that *early york* and *sugar loaf cabbages*, will yield as *sweet milk* and *butter*, as any food that can be given to a cow; sweeter, finer butter, butter of a finer colour, than these cabbages make, never was made in this world. I never had better from cows feeding in the sweetest pasture.

857. "*Now as to Swedish turnips*, (or ruta bagas,) they do give a little taste, especially if boiling of the milk pans be neglected, and if the greatest care be not taken about *all* the dairy tackle. Yet we have, for months together, had the butter so fine from Swedish turnips, that nobody could distinguish it from *grass butter*. But to secure this, there must be no sluttishness. Churn, pans, pail, shelves, wall, floor, and all about the dairy must be clean; and above all things, the pan must be *boiled*."

858. *Cows fed on the roots alone*, and not with both *leaves* and roots, will generally prevent the milk from having a bad taste.

859. *A cow kept in the foregoing manner*, need never be turned out of her pen, except just at calving time, or when taken to the bull.

860. *As regards the pen and shed*, let it be remembered that though the cow have the same quantity and quality of food, she will not yield above two thirds as much milk, when kept in an open field or yard, from September until May, as in a close warm shed; therefore, let a small shed, (say ten by twelve feet,) made close and tight all round, with a door sufficiently large, facing the south, (if possible) be put up, (and who cannot with the assistance of one person, knock up a cow house in half a winter's day?)

861. *Adjoining this shed*, you may have a small yard, that she may go into or out of her shed as she pleases; the shed should have a box, or trough, fixed at the head of the shed, made perfectly tight, and which should be filled with fresh and clean water every morning, and kept so during the day, that she may drink whenever she pleases; now don't neglect this, as it is very important.

862. *She should be fed three times a day*—at day light, at mid day, and at sun set, and should be milked *only when she is eating.*

863. *Her turnips, or whatever food is boiled*, should be given to her when perfectly cold, *but by no means when hot.* I have always found it a good plan to boil, or steam at once, as much as will suffice for a day's feeding—which should always be put on the fire early in the morning; it does not take long to boil, but may be left in the pot, or steam tub, until ten o'clock, when it is taken out, and put into a tub, large enough to hold it all; procure a tub just large enough to contain a feed, or one third of this mess; into which the feed for mid day is put, where it will soon cool, and be ready for the cow by that time, the balance is left in the large tub, for the night and morning's feed. (An economical mode of steaming cattle or hog's food, will be found in Art. 98, paragraph 912.)

864. *It would be advisable* once or twice a week, to let the cow have a little run out, and pick along the sides of a road, or wood; and during her absence from the pen and shed, would be a good time to place fresh litter, &c., over the pen, and to give her a clean dry bed of straw or litter in the shed, which should be daily cleaned out, and the filth thrown into the pen, or yard; in this way, you will be astonished at the quantity of fine rich manure, she will give you during the winter

months, and this manure, is double the value of the same quantity from common stock cattle, having the run of the fields only to subsist on.

ART. XCVII—THE DAIRY.

865. *The dairy utensils* should always be kept very clean and sweet, for the least sluttishness, will give to your butter a disagreeable smell and taste. In order that every possible degree of acidity (to which a dairy is always very liable to,) may be removed, the utensils should be scoured with hot water and brick dust, and afterwards rinsed with cold, and kept in an airy place, but if possible, not in the dairy, for that is intended for milk and cream alone.

866. *The pans should be kept* perfectly sweet by boiling, as the slightest taint or acidity, may spoil a churning, and perhaps several churnings. The churn should also be boiled, at intervals of three or four days, but always scoured as above; after each churning, never let the butter milk remain long in the churn, after the butter is made. The milk pail should be scoured after each milking; a slight washing will not do, for the wood absorbs the milk, which soon becomes acid. The shelves, floor, wall, and in fact every part of the dairy must be well scoured and kept clean.

DIRECTIONS TO THE DAIRY MAID.

867. *Let tidiness and cleanliness*, be the *first commandment* to the dairy maid, for these are positively necessary. A dirty, sluttish, and careless one, will not only be disagreeable to yourself and friends, but will cause the milk and butter, to be much more so.

868. *Let her proceed early in the morning* to the cow pen, and take with her a sufficiency of clean, cold water, and with a sponge, wash each cow's udder clean, and douse it well with the cold water, winter or summer; and her hands and arms must be kept clean also.

869. "*Milk each cow as dry as you can*, and when you have milked each cow, as you suppose, dry, begin again with the cow you first milked, and drip them each; for, the principal

reason of cows failing in their milk, is from negligence in not milking each cow dry, particularly at the time the calf is taken from the cow. Suffer no one to milk a cow but yourself, and have no gossiping in the stall."—*Farm. Mag.*

870. *See that your cows are regularly fed*, and supplied with clean water, and that their sheds are kept clean, and well supplied with good litter for their beds; have every thing removed that may cause uneasiness, or disturb their comfort.

871. *Milk only when she is eating* her regular meals, and as soon as possible after the milk is drawn from the cows, strain it through a clean linen cloth, or a hair seive, into the milk pans, which ought to be kept perfectly clean, sweet and cool.

872. "*If any ill flavour is apprehended*, (says MR. FESSENDEN,) from the cows having eaten turnips, &c., the addition of one eighth part boiling water to the milk, before it is poured into the pans, will effectually remove it."

873. *A writer in the New-England Farmer says*:—"It does not, in my opinion, improve the butter, to have the milk sour, before the cream is gathered; but at this season of the year, (June) it can hardly be prevented. It should, however, never be suffered to stand till the milk curdles.

874. "*When the cream is gathered*, it should be set in an open vessel, where the air can have free access to its surface; and during the time that the cream is gathering for a churning of butter, it should have a spoon or stick, kept in the vessel where the cream is, by which the cream should be stirred, at least half a dozen times a day, enough to mix it up well, and bring a new portion of it to the air; and it should stand before the window of the milk room, or some other, the most airy position afforded by the room. When you have gathered a mess for this season of the year, fill your churn over night with cold water, and empty it in the morning. Put in your cream, and churn it with a regular, steady, and not too rapid motion. It will generally come in from ten to twenty minutes, and when fetched, it needs no colouring matter.

875. "*I know that women say*, flies will get into the cream if left uncovered; let them get in and pick them out, rather than cover up the vessel containing the cream.

876. (NOTE.—The windows of the dairy should have moveable shutters, or frames in the inside, covered with gauze, millet, or wire netting, which will freely admit air, and exclude flies, or a covering for the pans may be made of the same materials.)

877. "*The windows to milk rooms*, in many houses, are not sufficiently large; stint your milk room of air, and keep the cream pot covered to exclude flies, and your butter will be *white* and *bitter*, besides being a long while coming."

878. "*I churned*, (says a writer in the *Indiana Farmer*,) perhaps three hours to no purpose, and then tried to think of some remedy that I had read in some periodical, but I could not remember precisely, but I recollected the reason stated, was the churn being too sour; I then thought of soda, (pearl ash will do,) and dissolved a large tea spoon full in a pint of warm water, and as I poured it in, churning at the same time, it changed in a moment, and gradually formed into a beautiful and solid lump of sweet butter."

879. "*Butter on being taken out of the churn*, ought to be instantly washed in spring water, until the water comes off colourless. After this, the sooner it is salted the better. In salting use the best salt.

880. "*To three parts of salt*, add one part of loaf sugar, both finely pulverised, and perfectly well mixed. One ounce of this, to sixteen ounces of butter, is the proper quantity.—Let it be thoroughly incorporated with the butter."—*Chamber's Edinburgh Journal.*

KEEPING BUTTER.

881. *If you intend keeping your butter*, which is made in summer for winter use, go to the grocers and purchase an empty kit. Choose one (two or more if desired,) of stout, thick staves.

882. "*Kits made of wood*, are much superior to stone ware, in keeping butter. A thin wooded kit is not so favourable for preserving butter.

883. "*In the process of salting*, a little salt and water ought to cover the butter from the first, and a piece of thin linen should also be spread over it. The sides of the kit must be daily wetted with thin salt and water, by which, mould is prevented from forming on the empty part of the kit, during the time of filling. The kit ought to be filled within one inch of the top, and kept constantly covered by linen, and a pickle of salt and water. Butter is apt to rise above the pickle. This is easily prevented by turning over the butter a dinner plate.—By placing a weight on the lid, the plate will be kept down.

"The kits must be kept on a cool, airy shelf of the dairy, not on the floor, and occasionally moved a little round.

884. "*A jar of ready made pickle*, just strong enough to move an egg, but not so strong as to cause it to swim to the top, ought always to be kept in the dairy. Have also at hand a can of prepared salt and sugar, to be kept in a dry place, as the dairy will be too damp. The kits should be all numbered, and those first salted, should be first used."—*Edinburgh Jour.*

ART. XCVIII.—HOGS.

885. "*The sow goes with young* one hundred and twelve days. She is fit to receive the male in the first year of her age, and the latter is able to propagate his species at the same early period, but he should be twelve months old, before he is admitted to the female. The female produces from five to ten, or more, at a birth, and she can easily be made to produce and rear, two litters a year, and she may even rear five in two years.

886. "*She is ready to receive the male*, soon after the birth of her young, but the time should be chosen, which allows her to produce her litter at the most convenient season. Thus, if she is to be made to litter twice in one year, the first should if possible, be produced about the beginning of February, and the second about the beginning of August, so that the last litter may gain full strength, before the arrival of cold weather.

887. "*The time* when she is about to produce her litter, will be known by her carrying straw in her mouth, to make her bed. Before this, however, she should have been separated from her fellows, and carefully littered. The straw should be short, and not in too great quantity, lest the pigs nestling beneath it, unperceived by the dam, be crushed by her when she lies down.

888. "*During the period of nursing*, the dam and the young, should be lodged dry and warm. They should be fed three times in the day, with whey, milk, and a little water, slightly warm, mixed with bran, meal, or any farinaceous substance, and when the pigs are in the course of feeding from the troughs, the mother may be allowed to go at large, for an hour or two. In six weeks, if they are well fed, the pigs may be weaned; but should they not have been well fed,

eight weeks will be required. When weaned, they are to be fed three times a day, with farinaceous food, mixed with water, and with whey, or other refuse of the dairy or kitchen. In a few weeks they will begin to eat potatoes, turnips, and all other sorts of food."—*Elements Practical Agriculture.*

889. JAMES E. LETTON, ESQ., observes:—"Sows are susceptible of conceiving when four or five months old, but far better at a later period. I would recommend not to breed then, until about eight months old, that their first littering will be when they are about twelve months of age. Sows impregnated from the twentieth, to the last day of December, will bring pigs from the tenth to the twentieth day of April, as the period of gestation is about one hundred and twelve days. I have a number on record of the above age, and find their produce to be from eight to thirteen pigs a litter.

890. "In an ordinary way, *sows suckle their young* in the spring, from six to eight weeks, but in the fall, the sows frequently wean their young in about six weeks.

891. A. B. ALLEN, ESQ., remarks:—"A boar should never be permitted to be used until seven months old at least, and it would be much better that he were allowed to run till nine months. But if commencing at seven months, he should cover sparingly, say not more than fifteen or twenty sows, till a year old, and these as distant apart as possible; one or two only in a single week. From this time, until he has obtained pretty full vigor, which I should place at about eighteen months, he may be bred from a little more freely.

892. "*His spring seasons* might then vary from twenty-five to thirty sows, and his fall nearly double this number. In the mean while he should be kept with care. A strong door may open from his pen into another, to which the sow is introduced; he is then let in, and allowed one coitus only, immediately after which he must be turned back, and the sow taken away. It has generally been noted, that *one covering* produces a more numerous and stronger offspring, than two or three, and that *ad libitum* serviee is alike pernicious to all parties."

893. The same author says:—"I think *three services abundant in any case*, and I should not wish my boars *in their prime*, to serve more than five sows in a single week, or fifteen in one month, or forty-five in four months; still, less or more, according to judgment, should be done."

894. "The two following rules of COOPER, (says the author

of the *American Swine Breeder*,) are worthy the attention of all breeders:—

895. "1. Choose those animals or vegetables, to propagate from, that possess the qualities you wish to propagate, in the greatest profusion. Volumes may be written to illustrate and confirm this advice, but nothing can add to it substantially.

896. "2. Never quit one good breed, till you can pick out from a better. By following this plain method for a few generations, always seeking for those parents who have the points you want, in the greatest perfection, will you certainly improve your stock, whether of racers, cart horses, cows, corn, or strawberries."

TREATMENT OF SOWS.

897. MR. LETTON (whom I have already quoted,) says:— "My *young maiden sows*, I hardly ever permit to be served but one time; my reason for this is, that an old boar is too heavy and too strong for them; he mashes them down when they are willing; if not, he hunches them down with his nose, and bruises them so much, that it impedes their growth forever afterwards. It is astonishing to think, how they frequently support them. I disapprove, under any circumstances, of letting the male to sows more than once, when he is in good order.

898. "I recommend an aged male to maiden sows in all cases, to secure large, sprightly, well formed, and more prolific pigs.

899. "*When within two or three days of their littering*, I always separate my sows, and put them in sheds or houses by themselves. I prepare leaves for their beds, if practicable, as I prefer them to straw or hay; they are light and warm, and there is no danger of the young pigs getting entangled, as they do sometimes in straw; and, being very weak, dying before they get to the teat. Whilst confined, before littering, give them two ears of corn, morning and evening, and a plenty of water, until they have farrowed. *After they have littered*, give nothing but water, for twenty-four hours, then give two or three ears of corn, night and morning, for some four or five days; never give rich slops for some four or five days before and after littering, for they are not in good health, but feverish, and rich food will increase the fever, or swell the teats, so that the pigs cannot draw them, more especially in warm weather. I have known instances where the milk entirely

dried up from fever, and the pigs died for want of
practice frequently is contrary to reason, in yielding
posed calls of nature; therefore, many feed their sow
richest food, immediately after littering. Thus, I
that very injurious disease among the pigs, scours.

900. "*Treatment of the pigs after they are some fe*
days old.—The sows should be kept separate from e
at least ten days after littering, to secure the pig's af
their own mother, and to prevent them, in large he
scouring, which is so common when the sows are per
run and litter together. The strong pigs will suckl
sows, for their superior strength will force the wea
younger from the teats, who consequently soon beco
and weak, which result, such keeping as I have descrit
good bearing to prevent. I can say from experien
every pig will have its own teat, and regularly, as
calls, or permits it to suckle, will return to its own
forced away by a stronger hog. My practice is, af
have arrived at the age before mentioned, to put them
of grass, sufficient for their grazing and exercise, with
shade and water, if practicable, and to always ke
hogs, of any size, away from them, for the purpose of
the sows from fighting, and running over and cripl
young pigs, which is pretty generally the case, if t
permitted to feed together."

901. "*It is a great error*, says Low, to leave these
in a state of filth and neglect. The hog is not a filthy
by choice. He delights in a clean bed; he will
indeed, in the mire like the elephant, the rhinoce
other thick skinned animals, but this is not because h
filth, but because he loves coolness and moisture.

902. "But it is not alone the health, and consequen
of the great degree of docility and quietude, on the part of th
great hogs, which cleanliness secures, but a compa
thus treated. We have ourselves witnessed the su
result of daily rubbing, on different breeds of swine, r
them tractable, and familiarized to the approach and
man. Indeed so great appeared to be the relish, for
fort thus afforded them, that the appearance of the
was the signal for their approach. No sooner was t
tion of rubbing on one side finished, than they would
present the other, and seemingly evince in numerous w
gratitude for this kind and gentle treatment."—*Swin*

FEEDING SWINE.

903. "On the *economy* in the *preparation* and *distribution of his food*, is the farmer to rely for the comfort and rapid increase of his animals. To him, the questions whether food should be given in a natural, or unprepared state, simple, or mixed, fermented, or unfermented, together with the comparative advantage of grinding, steaming, or boiling, are points of great importance.

904. "*That the digestion of animals*, is not ordinarily sufficient, to derive nutriment from the whole of the food administered, is evident from the fact that kernels of grain are frequently voided with the natural passages, so entirely unchanged, as to be capable of subsequent germination. So well aware are many of this fact, that they allow their swine to follow droves of horses, to gather the unchanged grain thus voided.

905. "*It is also ascertained*, that the power of digestion and assimilation, acts with greater energy on some materials of food than others, and that regard is always to be paid to the nature of the substance, through which the nutritive matter is diffused. Many substances containing an equal quantity of this matter, differ much in their power of producing a rapid increase of flesh. Experiment has shown, for instance, that succulent vegetables, fatten oxen faster than the same amount of nutriment would do in an equal mass of dry food.

906. "*A proper distension of the stomach*, seems to facilitate its digestive powers, a fact which should never be forgotten, by those engaged in rearing stock. When aliment of extremely nutritive kind is employed, for the purpose of procuring rapid increase of flesh, there should also be a tolerably large admixture of that food, on which the animal naturally subsists.

907. "*It is a common error*, that *hard* or unprepared food *makes the hardest meat*—a doctrine whose fallacy is shown by such experiments as those mentioned—(*in the critical investigations of the French chemists* DUTROCHET *and* DUMAS, *and especially of* RASPAIL *and* M. BIOT—*all of which are to be found in the American Swine Breeder*,) for whatever the nature of the aliment, a similar process of digestion must be gone through, and the ultimate principle of nutrition—the chyle—is the same in all cases. In general, the finer the particles of food administered, the easier will be the process of digestion, and the greater the quantity of nutritive matter

furnished. It is those individuals whose digestive powers are weakened, that find benefit from thorough mastication. In regard to the feeding and fattening of animals, this principle is one of great importance, and inculcates the necessity of grinding, or cooking the materials given them, if our object be their own condition, or our interest.

908. "*The mode preferred* in the estimates of MR. YOUNG, for converting any kind of corn into food for swine, consists in grinding it into meal, and mixing the product with water in cisterns, in the proportion of five bushels of meal, to one hundred gallons of water; this must be well stirred several times a day, for a fortnight, during warm weather, and for three weeks, when colder, at the expiration of which time, it will have become fermented.

909. "*The practice of boiling, or steaming the food* of animals, seems to possess advantages attending few other modes of preparation. We are taught, however, by the results of the investigation of M. M. RASPAIL and BIT, that boiling, when resorted to, should be continued for a long time, and with considerable quantities of water, and that steam, when employed, should be only used at a high temperature. Long before the researches of these able chemists, another French philosopher, M. REAUMER, had exhibited the results of boiling grain, while endeavouring to assign a more philosophical reason, for the advantages attained by this process, than the vague assertions of popular opinions. For this purpose, he caused four measures of each of the six common sorts of grain to be boiled, until they were well burst, and he found that the increase of bulk in each sort, was as follows:—

Four measures of *oats* after being boiled to bursting, filled seven measures.

Four measures of *barley*, filled ten measures.

Four measures of *buck wheat*, filled fourteen measures.

Four measures of *maize, or Indian corn*, filled thirteen measures.

Four measures of *wheat*, a little more than ten measures.

And four measures of *rye*, filled nearly fifteen measures.

910. "It does not follow, that because the feeding of boiled food to one animal is found economical, that the same saving will result from a like course towards another, whose digestive powers are stronger. In the latter case, so little perceptible assistance would be rendered, to the strong digestion of the animal, as to prove the process attended with hardly any

saving of expense—indeed, with a considerable loss. The gizzards of fowls possess sufficient power, as proved by the experiments of SPALLAUNZANI, to crush oats and barley, and reduce glass to powder, while these former substances, if they escape the proper bruising from the teeth, not unfrequently pass through the stomach of horses in an unchanged state.

911. "The intelligent farmers of *Belgium*, who seem to be almost a century before other parts of Europe in improvement, never, it is said, give any roots to their live stock without boiling.

912. "*A steam boiler is commonly made* by setting a kettle, holding twelve gallons, or more, in a furnace of brick, or stone, and over this, a hogshead, or large barrel, with one head taken out, and the other bored full of holes, is set so close, that the steam of the food, when boiling, can only rise through the holes, and thence ascend among the articles to be boiled in the hogshead, and pass off at the top. In this way, a hogshead full of potatoes will be nearly as soon boiled, as a small part of them only could have been, if placed in the kettle underneath.

913. "*Carrots.*—It is the opinion of MR. YOUNG, that *boiled* carrots are not exceeded by any food for fattening hogs.

914. "*Cabbages for sows with pigs.*—Cabbages are supposed to be good food, increasing in a high degree the secretion of milk. They are, however, best adapted for feeding in small quantities, and to vary other mixtures.

915. "*Pumpkins.*—These, as well as some other vegetables, of the ground tribe, are asserted by many, to be an excellent food for hogs. As a *variety*, they may undoubtedly be fed with great advantage.

916. "*Sunflower.*—LOUDON, and other agricultural writers, mention the sunflower as an article occasionally used in fattening hogs. With proper cultivation, this article will yield abundantly of seed per acre, and it is admirably adapted to exhausted soils. Its leaves and stocks, in the *green state*, are preferred by cattle to grass, and when cut up and steamed, or boiled with cotton seed, or *a little meat*, afford a delicious nutriment to hogs. Like those of the parsnips, its stalks and leaves are aromatic to the taste, but possess far greater sweetness. (See Art. 37, paragraph 297.)

917. "*Jerusalem Artichokes*, are uncommonly nutritious, and can, doubtless, be cultivated with advantage for the food of hogs. (As such, see Art. 27, paragraphs 240 and 241.)

918. "*Prevention of disease*, is the grand point which should command the consideration of the breeder; and one which close attention will enable him, in general, to attain. The condition of swine, while growing, and especially while fattening, should be investigated daily. When these animals are enclosed in stall pens, or small enclosures, such investigations are absolutely necessary, and will always be faithfully pursued, by those who desire to keep their stocks in a healthy and thriving state.

919. "*Salt should be given to swine frequently*, and freely, and is easily administered, if intermingled with their food three or four times weekly.

920. "*Dry rotten wood* is another article found to be serviceable to hogs, and small quantities of it should be kept continually in their pens, or in places to which they have daily access—while to prevent the evils of over feeding, and they are numerous, sulphur should be resorted to.

"For surfeits, *sulphur* is an excellent remedy.

921. "*Charcoal is one of the best articles* that can be given to hogs, to correct acidity of the stomach, and preserve a healthy tone and action of the bowels."—*American Swine Breeder.*

Art. XCIX.—BACON.

922. "*Bacon is an article of use*, in nearly every family in this country, yet very little attention is paid to its preparation by most of our farmers. It is enough for them, that the hams are taken out, salted at random, smoked in an imperfect manner; and this is then called bacon.

923. "*The western part of Virginia is* most famous for its fine bacon, and those, who have in substance adopted the mode pursued there, find their bacon greatly improved.

924. "*Too heavy hogs are not as good for bacon*, as those that are smaller, if equally well fatted. One that will weigh two hundred pounds is large enough, as the salt will strike through the pieces more equally, and the smoking be more perfect. It is essential for the first rate bacon, that the pork should be corn fed; at least, if any thing is used to aid in

fattening, it should be in the first part of the time, and corn be given for five or six weeks previous to slaughtering.

925. "*The pork of corn fed pigs will be hard and compact,* and the kidney fat, instead of being soft and unctious like lard, will be solid like beef suet.

926. "*In the best establishments for making bacon,* three pecks of salt and one pound of saltpetre, is used for every thousand pounds of pork, the salt to be measured, and the saltpetre reduced to powder, thoroughly incorporated, or mixed with it. None but the best salt should be used in making bacon. That produced by evaporation is to be chosen, as more pure than any other kind.

927. "*The prepared salt* is to be thoroughly rubbed on the meat, and then liberally sprinkled over the outside. There is little danger of over salting from quantity; it is length of time that produces the result. The meat is to be laid with the skin side down, in good casks, the hams and shoulders first, and then the smaller pieces. Salt must be sprinkled over the bottom of the cask, before the meat is laid in. At the fourth or fifth day, the meat must be taken up, and again thoroughly rubbed in the salt. At this period of the process, some use a teaspoonful of powdered red pepper to each piece, and the whole is replaced after any bloody, or impure brine that may have formed in the cask is removed. In about two weeks, the smaller pieces will be fully salted, and should be taken from the cask, and the remainder repacked, those that were at the top, being now placed at the bottom, as pressure will prevent the passage of the brine through the meat, if the position of the pieces is not changed; the shoulders will be struck through in about three weeks, and the hams in four.

928. "*Smoking is the next important part* of the business, and should be well done, or good bacon cannot be made.—Smoke houses are usually too small; the meat hangs too crowded and too near the fire. The pieces should by no means touch the wall or each other, but space for the free circulation of the smoke, should in all cases be allowed. The time required for smoking, is the same as that for salting—four weeks for hams, three weeks for shoulders, and two weeks for the other pieces, or middlings.

929. "*Damp weather is improper for smoking meat,* as the bacon, from the dampness that is apt to settle on the meat, acquires a bitter flavour in some respects, like that given by pyroligneous acid.

930. "*Sound maple chips, or blocks of hickory wood*, are chosen for smoking meat, though the celebrated Hamburg hams are smoked with oak wood alone.

"The smoke house should be at a moderate temperature, as that will greatly assist in preventing the appearance of dampness on the meat.

931. "*Two fires a day*, if properly made, will finish the smoking in the time specified above. Some throw powdered red peppers on the fire, occasionally, as it is said, to prevent the attacks of insects on the bacon after smoking, and somewhat improves the flavour.

932. "If the *smoke house can be kept perfectly secure* against the entrance of insects, and it is dark and cool, the bacon may be left in till wanted for use; but there are few houses of this description, and on the approach of warm weather, must be taken down and packed away secure, till required for the table.

933. "*Salt, clean hickory ashes, or oats*, will secure it from insects or dripping, if placed in a dry and cool position. It is sometimes kept by white washing the surfaces, by dipping the hams in strong ley, which converts the surface into a kind of soap, and sometimes by sowing them up closely in cotton. Probably the best mode, however, in all respects, is to pack them down in powdered charcoal, which will not only effectually exclude all insects whatever, but by keeping the meat dry, and correcting any tendency to unpleasant flavour, keep the meat in good order for any length of time."—*Genessee Farmer.*

CAROLINA RECEIPT FOR CURING BACON.

934. *After your hogs are killed*, dip them in cold water, before you scald them, and the hair will not set. Cut up the hogs while warm, have ready four table spoonsful of saltpetre finely powdered, and four of brown sugar, mix *one of each* well together, and rub that quantity on every ham, the knuckle likewise, every hour while they are warm. Rub salt on your gammons and flitches, and lay them at the bottom of your tub or cask, then lay the hams on them, the skin side down.

Rub them all with salt the next day, and put the hams in the bottom, and the gammons and other pieces on the top, let them stand four or five days in that salt, then take them out and rub over again with salt. Put them in the tub, and continue to rub them every three or four days for three weeks, with the salt that is in them. Place them on a table with

laths or slats between, until they are dry enough to smoke.—Turn them every three or four days; they will take three weeks to dry, then wash the salt off with cold water, and put to smoke. Hang the knuckle end down.

ART. C.—SHEEP.

The committee of the *Monticello Planters' Society*, in their report on sheep in 1838, observes:—

935. "*The ewes commonly lamb in February*, or from the middle of January till March: to improve the stock, to raise them most abundantly, the males should be separated from the flock, until the middle of August—so that ewes might lamb in March and April. By adopting this plan, for one year only, the difficulty is removed, and your ewes will lamb afterwards during these months. The policy of this suggestion, and under our climate, your committee trust, will be acknowledged by the most careless observer.

936. "*The species should never be increased* under two years of age. Your committee would simply recommend, that in nursing the lambs, little else is essential, than to house them in unfavourable weather. When the sheep are sheared, and great care has been taken, the average weight of the fleece is nine or ten pounds.

937. "*Our habit is to shear in April*: before the shears are applied, the sheep should be washed, and the fleece *unburred*. Pursuing a different course, has rendered our wool heretofore unfit for market, and decreased in quantity.

938. "*For a more convenient way of shearing*, than is our wont, your committee would beg leave to refer you to the May number (1837) of the Farmer's Register. (See paragraph 952, for the Art. referred to.)

939. "*To those acquainted with either our district or State*, it would argue folly to remark, that we are necessarily stinted in our pasture lands: and if a proper use has not been made of them, it would indicate a want of energy in our population, which your committee would be loath to confess.

940. "*How do sheep thrive best?*—On this subject we are of opinion, (not altogether unfounded,) that they are more thrifty

in the woods than elsewhere, particularly through the winter; running at large, feeding on the moss and evergreens, they are healthier than when enclosed and bountifully fed. During the snows or cold rains, they require to be put into the fold.

941. "*Of the diseases common to sheep* in this State, the *rot* and *staggers* are the most fatal. The former, we apprehend, originates from too long confinement to one and the same pasture: to *change the pasture*, and *salt frequently*, is a very good remedy. Of the latter disease, the staggers, your committee incline to think it owes its origin, to the sheep being fed on corn, or any rich grain; and we would here remark, for the benefit of those who may take interest enough to try the experiment, that no danger of the kind results, where the sheep are fed on peas. To relieve the sheep affected by staggers, we would suggest a rowel or seton, should be inserted in the lower jaw. Sometimes the cure is effected by bleeding—which may be done by cutting the ear every two hours, until relief is had. For most of the minor diseases incident to sheep, arising from unwholesome diet, the remedy suggests itself."

942. M. BUFFON says:—"*One ram* will be sufficient for *twenty-five* or *thirty ewes;* but that he should be remarkable for strength and comeliness, that those which have no horns are very indifferent; that the head of a ram should be large and thick, the forehead broad, the eyes large and black, the nose short, the neck thick, the body long, the back and rump broad, the testicles large, and the tail long; that the best are white, with a large quantity of wool on the belly, tail, head, and ears, down to the eyes; that the best sheep for propagation are those which have most wool, and that, close, long, silky, and white; especially if at the same time they have a large body, a thick neck, and light footed.

943. "*That ewes fatten very fast during their pregnancy;* that as they often hurt themselves, and frequently miscarry, so they sometimes become barren; and that it is not very extraordinary for them to bring forth monstrous productions.—But when properly attended, they are capable of yearning during the whole of their life, or to the age of ten or twelve years. But most commonly when they come to be seven or eight years old, they begin to break, and become sickly; and that a ram is no longer fit for propagation after eight years, at which time he should be fattened with the old sheep.

944. "*Sheep should in the summer be turned out early* in the

morning to feed; and in four or five hours, after watering, be brought back to the fold, or to some shady place. At four o'clock in the afternoon, they should be turned to their pasture again, and continue there till evening; they should pass the night in the open air, which would render them more vigorous, clean, and healthy. As the too great heat of the sun is hurtful to them, shady pastures are best for them; or else to drive them to a place, with a western descent in the morning, and the contrary towards evening.

945. "*Every year* a flock of sheep should be examined, in order to find out such as begin to grow old, and ought to be turned off for fattening. As they require a particular management, so they should be put in a flock by themselves.—They should feed while the grass is moistened with dew in the morning. Salt should be given them to excite thirst, as the more they drink, the faster they will grow fat. But to complete their fattening, and make their flesh firm and solid, they should have some corn or grain given them."

946. "*When sheep have once become fat*, they should be killed, for it is said they cannot be made fat a second time.

947. "*The teeth of ewes* begin to decay at five, those of wethers at seven, and those of rams not until eight years of age.

948. "*Turnips are said to be injurious to ewes with lamb*, but may be well given them after they have yearned. Care should be taken to place in the stable small tubs, or troughs of water, for the sheep to drink in. They will do very well in summer without water, as they feed when the dew is on, but they need water in winter, especially if fed mostly on dry food.

"When sheep have *colds*, and discharge mucus from the nose, good feeding, together with pine boughs, given occasionally, will cure them; or tar, spread over a board, over which a little fine salt is strewed, will induce the sheep to lick up tar, and this will cure a cold. Half a gill of Indian corn a day, given to each sheep during winter, is recommended as keeping them in good heart, preventing the wool from falling off, and enabling the ewes to rear their young, better than they would if fed altogether on food of a less substantial nature.

949. "*With regard to giving salt to sheep*, writers have disagreed. It is believed to be better not to give them any, than to allow them too great a quantity."

"A writer for the New England Farmer, with the signature M. R. C., gives the following judicious remarks on sheep.

950. "*Perhaps there is no domestic animal*, that requires more *nice* and *constant attention* than the sheep, and no other that will more richly pay for generous keeping. Though he may not be more liable to disease, nor require a better quality of food than neat stock, still that management which will keep cattle in good care, will not answer for sheep. His habits and mode of feeding are entirely different. For instance, in the winter season, a cow may be kept tied to a stall twenty two hours out of the twenty four, and, if well fed three times a day, keep her flesh, and get sufficient exercise for her health. Serve a sheep in the same manner, and it would not probably live a month. It is natural for sheep to move about and change situation. Turn a flock of hungry sheep into a pasture, they will run to the end of it before they begin to eat; feed them in troughs, they will run over all till they come to the last, when they have it in their power.

951. "*They are almost continually shifting situation*, from hill to dale, from one kind of food to another; and it is a fact that sheep will thrive better on two or three different kinds of ordinary fodder, than they will to be confined to one kind that is of a superior quality."—*Complete Farmer.*

FROM THE FARMER'S REGISTER.

SHEARING SHEEP.

952. "*The proper way is never to tie the sheep* to be sheared. It only makes them struggle the more, for the tying gives them pain, and of course they will struggle to get rid of it. Instead of tying the sheep, place him on the bench or table, (which should be as high as a tall man's knee,) right upon his butt, and raise his feet a little, so as not to touch the table, or bench; and as he will have nothing to kick against, he will make no resistance, but lie perfectly quiet. Then let him lean upon your breast, with his feet from you, and a little elevated, so that his feet cannot touch any thing, not even your clothes, for if you give him hold of anything with his feet, he will kick and struggle. After leaning him against your breast, put his head under your left arm, and you have entire command of him. Then begin to shear the neck, near the head, and shear from the fore, or under part of the neck, round to the back bone of the neck, in half circles, until you

reach the fore legs; continue round the fore legs, always shearing in half circles, from the front round to the back bone; also, from the middle or front of the belly in the same way, in half circles, round to the back bone, until you reach the tail, which will be exactly half the sheep. Then shift the sheep round, still keeping him on his butt, and his feet from touching any thing, which would cause him to kick and struggle. With his head under your left arm, begin again to shear at the neck, near the head, as before, by shearing from the back bone of the neck, this time in half circles, to the front of the neck, where you began at, so as to meet up, and make entire circles around the neck, with the first half circles already done; and so on, from the back bone to the belly, making circles around the whole body, legs and all, until you reach the tail, when the operation is done. And the sheep will be sheared in circles all around the body, and if fat, will look very well, instead of looking very ugly, as they generally do, in the common mode of shearing.

953. "*This mode of shearing* saves the time of tying, avoids the pain caused by it, and you are much less apt to cut the sheep, and the sheep looks much better after shearing, than in the old way; besides which, you get the wool off sooner, and in better order; for the fleece falls off in an entire sheet together, and not in detached pieces; and it enables you to roll up each fleece in a snug bundle to itself.

"I think a man may shear one third more sheep per day, in this way, than in the old fashioned way. My hands frequently shear fifteen or twenty sheep per day, in this way, and formerly, in the old way of tying, they never exceeded twelve sheep per day to the hand. WILSON, an Englishman, who taught my men to shear, could shear thirty, and used to tell of their shearing forty and fifty in England, to the hand, per day in this way; and some very expert shearers, far exceeding that."—*Hill Carter.*

ART. CI.—GOATS.

954. *The goat, of all farm stock*, is the hardiest and most domestic. It is a native of many mountainous parts of Eu-

rope, Africa, Persia, and India. The female goes with young four months and a half, and brings forth one or two, and sometimes three at a birth. And if its young are killed when a few days old, or taken away from the mother, she will give nearly two quarts of milk a day for many days, and will continue to do so much longer, if cabbage leaves, turnip pealings, &c., be thrown out to her.

955. *But generally speaking*, a goat is kept where there is a lane or common, where they pick up what they can; and are but seldom fed regularly as a cow is; even thus, they give on an average, three half pints of milk a day, and are seldom dry three weeks in the year, provided, they are milked regularly, and every drop taken from them at each milking. She will allow herself sucked by the young of various other animals, even infants have been known to be suckled by a goat, and the attachment between the nurse and infant, appears strong and mutual; she has been seen to leave her food, run about, bleating and evincing every uneasiness upon hearing the cries of the infant.

956. COBBETT says, "there is one great inconvenience belonging to goats; that is, they bark all young trees that they come near; so that if they get into a garden, they destroy every thing. But there are seldom trees on commons, except such as are too large to be injured by goats; and I can see no reason against keeping a goat, where a cow cannot be kept. Nothing is so hardy, nothing so little nice as to its food.

957. "*Goats will pick peelings out of the kennel* and eat them. They will eat mouldy bread or biscuit; fusty hay, and almost rotten straw; furze bushes, thistles; and, indeed, what will they not eat, when they will make a hearty meal on *paper*, brown or white, printed on, or not printed on, and give milk all the while!

958. "*They will lie in any dog hole.*—They do very well clogged, or stumped out. And, then they are *very healthy things* into the bargain, however closely they may be confined. When sea voyages are so stormy as to kill geese, ducks, fowls, and almost pigs, the goats are well and lively; and when a dog of no kind can keep the deck a minute, a goat will skip about upon it as bold as brass.

959. "*Goats do not ramble from home.*—They come in regularly in the evening, and if called, they come like dogs.—They are pretty creatures, domestic as a dog, will stand and

watch as a dog does, for a crumb of bread, as you are eating; and give you no trouble in milking."

960. LOUDON observes:—"In its *internal structure*, it extremely resembles sheep, but is far superior to them in alertness, sentiment, and intelligence. The goat approaches man without difficulty, is won by kindness, and capable of attachment. The extremely unpleasant odour attending these animals, is supposed to be beneficial, and horses appear so much refreshed by it, that a goat is on this account, often kept in the stables of the great."

ART. CII.—RABBITS.

961. "*No live stock is less liable to disease* than the rabbit, with regular and careful attention. But without regular and careful attention, no live stock is more precarious.

962. "*Rabbit keeping is practised* by a few individuals in almost every town, and by a few in almost every part of the country. The only considerable rabbit feeders of whom I heard, some years since, were two gentlemen, the one resident in Oxfordshire, the other in Berks, (England.) The former fed some hundreds, and then, it was said, intended to double his stock. The *huts* were placed in a small building, set apart for that purpose. The then stock produced one load of dung per week, two loads of which were sufficient to manure an acre of land. Three dozen of rabbits per week, were sent to the London market. The price of the dung used to be eight pence per bushel, and I believe, thirty-six bushels are reckoned a load. The Berks gentlemen, according to the survey of that country, fed white rabbits on account of the superior value of their *skins*, from their application of late years to the purpose of trimmings. Twenty does and two bucks were my largest stock.

963. "*The rabbit house* should stand upon a dry foundation, and be well ventilated. Exposure to too much humidity, whether externally or internally, is fatal to rabbits; which are liable to the rot like sheep, and from the same causes.

964. "*The huts or hutches*, are generally placed one above the other, to the height required by the number of rabbits, and

the extent of the room. When a large stock is kept, to make the most of room, the hutches may be placed in rows, with a sufficient interval between, for feeding and cleaning, instead of being joined to the wall, in the usual way. It is preferable to rest the hutches upon stands, about a foot from the ground, for the convenience of cleaning under them. Each of these hutches intended for breeding, should have two rooms, a feeding and a bed room.

965. "Those are single, for the use of the *weaned rabbits*, or for the *bucks*, which are always kept separate.

966. "*The object being to obtain the dung pure*, for sale, no litter should be allowed; but on a farm where the dung is expended at home, the hutches should be littered with refuse straw or hay, perfectly dry. The rabbit house to contain a tub for the dung, and a bin for a day's supply of hay, corn, roots, or other food, which should be given in as fresh a state as possible.

967. "*There are other modes of confining rabbits for breeding*, in which they are left to their liberty, within certain bounds; for example, an artificial mound walled in, in which they burrow and live as in the natural state; and an island as described in MR. YOUNG'S Annals: methods which are certainly ornamental and pleasurable, as well perhaps as more for the comfort of the animals; but surely not so profitable to the owner as hutching, in which mode, also they may be preserved, with due care in the highest state of health.

968. "*Rabbits at large*, must always suffer more in point of profit, by loss of number, than they gain, by cheaper feeding, exclusive of the mischief they do; but this principle operates proportionately in limited enlargement, as in the unlimited upon a warren.

969. "*They are quarrelsome and mischievious animals;* and the *bucks*, when at liberty, destroy a considerable part of the young. A run abroad, indeed, for young rabbits, until a certain age, might be beneficial, if *growth* were the object; but all rabbits must be separated at the age of puberty, or as soon as they become fit for breeding; they will else tear each other to pieces."—*Mowbray.*

BREEDING RABBITS.

970. "*The doe will breed* at the age of six months, and her period of gestation is thirty or thirty-one days. It should be premised that the buck and doe are by no means to be left

together; but their union having been successful, the buck must be immediately withdrawn, and the doe tried again in three days; in fact with rabbits, this business is conducted on the same principle as in the stud.

971. "*Like chickens, the best breeding rabbits* are those kindled in March.

972. "*Some days before parturition*, or kindling, hay is to be given to the doe, to assist in making her bed, with the flue, which nature has instructed her to tear from her body for that purpose. She will be at this period, seen sitting upon her haunches, and tearing off the flue, and the hay being presented to her, she will with her teeth, reduce and shorten it to her purpose. Biting down of the litter or bed, is the first sign of approaching pregnancy.

973. "*The number produced*, generally between *five* and *ten*; and it is most advantageous always to destroy the weak or sickly ones, as soon as their defects can be perceived, because five healthy and well grown rabbits, are worth more than double the number of an opposite description, and the doe will be far less exhausted.

974. "*She will admit the buck* again with profit, at the end of six weeks, when the young may be separated from her and weaned. Or the young may be suckled two months, the doe taking the *buck* at the end of five weeks, so that the litter will leave her about a week before her next parturition.

975. "*A notion was prevalent formerly*, of the necessity for giving the buck immediately after the doe had brought forth, lest she should pine, and that no time might be lost; and if it were intended that no time might be lost in destroying the doe, such, indeed, would be the most successful method.

976. "*Great care should be taken that the doe*, during her gestation, be not approached by the buck, or indeed by any other rabbit; as from being harrassed about, she will almost certainly *cast* her young. One doe in a thousand may *devour* her young; the sign that she ought to be otherwise disposed of. Some does admit the buck with difficulty, although often apparently in season; such should be immediately fattened off, since it can never be worth while to keep an objectionable individual for breeding, of a stock to be produced in such multitudes.

977. "*Should the doe be weak* on her bringing forth, from cold caught or other cause, she will drink her beer caudle, as well as any other lady; or warm fresh grains will comfort her.

978. "*With due attention to keeping them warm* and comfortable, and guarding against any sudden impression from cold, and more particularly moist air, and with the aid of the best and most nourishing food, I have bred rabbits throughout the *winter*, with nearly equal success as in the summer months. But, in truth, their produce is so multitudinous, that one might be well satisfied with four or five litters, during the best part of the year, giving the doe a winter fallow. Even four litters would, upon the lowest calculation, produce *twenty young ones annually to each doe*—equal to *an annual two thousand* from a stock of *one hundred does*. I have no experience of does as breeders, beyond the *fifth* year: the *buck* will come in at six, or even four months old, and be in perfection from the age of two to three years.

FEEDING.

979. "*Upon a regular plan*, and with sufficient attendance, it is better to feed three times than twice a day. The art of feeding rabbits with safety and advantage is, always to give the upper hand to dry and substantial food. Their nature is congenial with that of sheep, and the same kind of food, with little variation, agrees with both.

980. "*All weeds, and the refuse of vegetation should be banished from rabbit feeding.*—Such articles are too washy and diuretic, and can never be worth attention, whilst the more solid and nutritious productions of the field may be obtained in such plenty, and will return so much greater profit. Rabbits may, indeed, be kept, and even fattened upon roots, good green, meat and hay; but they will pay for corn, and this may be taken for a general rule. Rabbits which have as much corn as they will eat, can never take any harm, from being indulged with almost an equal portion of good substantial vegetables.

981. "*However, the test of health is*, that their dung be not *too moist*. Many or most, of the town feeders never allow any greens at all; the reason I suppose, because they feed almost entirely on grains. The corn proper for rabbits:—oats, peas, wheat, and some give buck wheat. (Note by COMPILER, Indian corn, oats, and sweet potatoes are generally used in South-Carolina.) The greens and roots, the same as our cattle crops, namely:—Jerusalem artichokes, cabbage leaves, clover, meadow hay, pea and bean straw.

982. "*Rabbits are generally sold from the teat*, but there is

also a demand for those of larger size, which may be fattened upon corn and hay, with an allowance of the best vegetables. *The better the food, the greater weight, better quality, and more profit*, which I apprehend to be generally the case in the breeding of all animals.

983. "*Rabbits are in perfection for feeding* at the fourth or sixth month; beyond which period, their flesh becomes dry and somewhat hard. It requires *three months*, or nearly so, to make a rabbit thoroughly fat and ripe; half the time may make them eatable, but by no means equal in the quality of the flesh.

984. "*They may yet be over fattened*, as appears by specimens exhibited a few years since at LORD SOMMERVILLE'S show, which were loaded with fat without and within, like the best feeding sheep; and at the late London cattle show, two were exhibited, one of them exceeding the weight of fifteen pounds.

985. "*The flesh of the rabbit* is esteemed equally digestible as that of fowls, and equally proper for the table of the invalid. This seems to be the general sentiment, especially with regard to the suckling rabbit *boiled*. There is, nevertheless, some discrepancy of judgment between our sages of the table, as to the preference due to the wild or tame rabbit. In our opinion, the flesh of the wild rabbit is most savoury and substantial, that of the tame and home fed, most delicate and chicken like.

986. "*Castrated rabbits* might be fattened, no doubt to the weight of upwards of ten or even fifteen pounds, at six or seven months old. The operation should be performed at the age of six or seven weeks.

987. "*With respect to quantities of corn consumed* in fattening; August, killed a young buck, which weighed three pounds, fit for the spit; it was put up in good case, and was only one month in feeding, consuming not quite four quarts of oats, with hay, cabbage, &c.

988. "*In slaughtering full grown rabbits*, after the usual stroke upon the neck, the throat should be perforated upwards, towards the jaws with a small pointed knife, in order that the blood may be evacuated, which would otherwise settle in the head and neck."

Art. CIII.—GALLINACEOUS FOWLS.

989. "*The principal varieties in use* are the *dung hills—game—Poland—bantam—Malay—Spanish*, and their endless varieties.

"The common *dung hill fowl* needs no description—of middling size, every variety of colour, and to be found in every part of the country.

990. "*Game fowls* are too well known to require a particular description. Their plumage, particularly the red, is most beautiful and rich; their size somewhat below the common, and their symmetery and delicacy of limbs, to be compared with those of the race horse and the deer; or, in more strict anology, with the wild species of their own genus.

"*Their flesh is of the most beautiful white*, and superior to that of all other breeds of domestic fowls, for richness, and delicacy of flavour; but the extreme difficulty of rearing the chickens, from their natural pugnacity of disposition, which shews itself at the earliest possible period, deters most breeders, excepting those who breed for the cock pit. I have many times had whole broods, scarcely feathered, stone blind from fighting, to the very smallest individuals; the rival couples moping in corners, and renewing their battles on obtaining the first ray of light. On this account few can be reared, and as this disposition, to a certain degree, prevails in the half bred, it prevents crossing with the game cock, otherwise a great improvement. The game eggs are smaller than common, finely shaped, and extremely delicate.

991. "*The Poland fowls*, as they are generally called, were chiefly imported from Holland. Their colour shining black, with white tops on the head of both cock and hen. The head is flat, surmounted by a fleshy protuberance, out of which spring the crown feathers or top, white or black, with the fleshy King David's crown, consisting of four or five spikes, they are not so thickly covered with feathers as some other breeds, and still less so with down. Their form is plump and deep, and the legs of the best species are not too long.

"*The Polander's are not only kept as ornamental*, but they are one of the most useful varieties; particularly on account of the abundance of eggs they lay, being least inclined to set of any other breed, whence they are sometimes called *everlasting layers*, and it is usual to set their eggs under other hens

992. "*Bantam.*—A well known small breed, originally from

India, is valued chiefly for its grotesque figure, and delicate flesh. Good nursers as well as good layers.

993. "*The Chittagong or Malady*, another Indian variety, is as a contrast to the bantam, probably the largest of the gallinaceous tribe. They are in colour striated yellow, and dark brown, long necked, serpent headed, and high upon the leg; their flesh dark, coarse, and chiefly adapted to soup.—They are good layers, and being well fed, produce the largest of hens' eggs, and of the most substantial nutriment. Being too long legged, they are not generally steady setters.

"I have heard of the *West India* breed, which are everlasting layers.

994. "The *Spaniard* is very large, the plumage black, and flesh white and delicate. They are well adapted for *capons*, and produce the largest eggs to be obtained. This breed is now common, particularly in London; all black, black legs, large red combs and gills—far too high on the leg, and in want of improvement in that particular."

ART. CIV.—BUILDINGS, &c., NECESSARY FOR BREEDING AND REARING CHICKENS.

995. "The warmest and deepest soils, are best adapted to the breeding and rearing of gallinaceous fowls, more particularly chickens; thence the greatest success, attended with the least trouble, may be expected on such, and far greater precaution and expense will be required on those of an opposite description. Of these last, the wet and boggy are the most injurious; since, however, ill affected fowls are by cold, they endure it still better than moisture, whence they are found to succeed well upon dry land, even in the severe climates of the north.

"In short, land proper for sheep, is generally also adapted to the successful keeping of poultry and rabbits.

996. "Whether or not the poultry be suffered to range at large, and particularly to take the benefit of the farm yard, a separate and well fenced yard or court must be pitched upon. The surface must be so *sloped* and *drained*, as to avoid all stagnant moisture, most destructive to young chickens. The

fences must be lofty, well secured at the bottom, that the smallest chicken cannot find a passage through, and the whole yard perfectly sheltered, from the north-west to the south-east. Various beds, or heaps of sifted ashes, or very dry sand, should be always ready, in which the hens may exercise that propensity, so delightful and salutary to them, of rolling or bathing themselves. This is effectual in cleansing their feathers and skin from vermin and impurities, promotes the cuticular excretion, and is materially instrumental in preserving their health.

997. "*The poultry houses within the yard or court*, if there be a choice, should have a southern aspect at any rate, should be well defended from cold winds, and the blowing in of rain or sleet. If the number of the stock be considerable, the houses had far better be small and detached, both for health and safety sake, and especially they should be absolutely impenetrable to vermin of every description. Should these houses abut upon a stable, brew house, or any conductor of warmth, it will be so much the more comfortable and salutary to the poultry.

998. "*The form and conveniences of the poultry houses are these*:—the bottom or floor should consist of well rammed clay, chalk, or earth, similar to the court yard, that its surface being smooth, may present no impediment to being swept perfectly clean.

999. "*For health's sake, the roof should be lofty;* the perches will be then more out of the reach of vermin, should any accidentally break in; and there should be only one long and level range of perches, because, when these are placed one above another, the fowls dung upon each other; convenient steps driven into the walls, will render easy the ascent of the poultry to their perches; but care must be taken, that the mistake be not made of placing these steps immediately one over the other, but in such wise, that they can jump from one to the other.

1000. "*Boxes of which every carpenter knows the form*, are to be arranged round the walls, and it is proper to have a sufficient number, the hens being apt to dispute possession, and sit one upon another; the steps will lead equally to these as to the perches. The board or step at the entrance, to be of sufficient height to prevent the eggs from rolling out.

1001. "Provision of a *few railed doors may be made*, for occasional use, to be hung before the entrance, in order to

prevent other hens from intruding to lay their eggs upon those which set, a habit to which some are much addicted, and by which a brood is often injured.

1002. "*The common deep square boxes*, uncovered at top, are extremely improper, because that form obliges the hen to jump down upon her eggs; whereas for safety, she should descend upon them from a very small height, or in a manner walk in upon them.

1003. "*It ought to be noted likewise*, that many breeders prefer to have all their nests upon the ground, on account of chickens falling from those which are placed above. In this respect, persons will be best guided by their own experience.

1004. "*Turkeys being roosting fowls*, may be kept in the yard of which we speak, either in a separate house, or their boxes for laying or setting, may be placed on the ground of the common houses, which last method, perhaps, is objectionable, since turkeys and common fowls might not roost quietly together. In the common way indeed, poulty of all kinds are associated in a common house, the cocks and hens aloft, and the ducks, geese, and turkeys upon the ground floor.

1005. "*Precautions.*—All the above arrangements, the best concerted plan, and the most valuable stock, will little avail the proprietor, or rather turn to his great mortification and disappointment, without a certain precaution of more consequence than all others—a defence against *midnight thieves.*—Not merely a lock, or a bar, or a mere trifling apology for security, but such an ample safe guard, that a man who values his property, may lay his head upon his pillow with confidence.

1006. "*In addition to substantial locks and hinges*, bells hung upon the inside of the doors, or upon any part liable to be shaken, are good precautions, since the noise may deter the thieves, even if it fail to alarm the family. But the most certain security is that kind of vermin cur, generally kept by country labourers. Several such should be enkennelled in the poultry court, and taught to bark, being useful against robbers and vermin. Nothing can charm and quiet the tongues of real good *latratores*, or barkers, and more particularly when several of them are together.

1007. "A plan like the above will obviously require the exclusive services of one or more *attendants*, according to its extent. My poultry, rabbits, and bees, formerly were well attended by an aged labourer, with the occasional assistance

of his wife; and the meritorious couple thus made an easy and comfortable living after a life of severe labour, a circumstance to me the source of heartfelt satisfaction. The sale of our surplus of this species of live stock, besides repaying all expenses, and exclusive of a most abundant and comfortable supply for the household, and for occasional presents, rendered an annual profit by no means contemptible. We disposed of the surplus, for the greater part, to a higgler in the vicinity, who allowed us a certain advance upon his common price, in consideration of the superior goodness and condition of the stock."—*Mowbray.*

ART. CV.—CHOICE AND TREATMENT OF BREEDING STOCK.

1008. "*It should be a general rule*, (says MOWBRAY,) to breed from *young stock:* a two year old cock, or stag, and pullets in their second year. Pullets in their first year, if early birds, will indeed, probably, lay as many eggs as ever after, but the eggs are small, and such young hens are unsteady setters.

1009. "*Hens are in their prime at three years of age*, and decline after five, whence generally, it is not advantageous to keep them beyond that period, with the exception of those of capital qualifications. Hens with a large comb, or which crow like a cock, are generally deemed inferior; but I have had hens with large rose combs, and also crowers, which were upon an equality with the rest of the stock. Yellow legged fowls are often of a tender constitution, and always inferior in the quality of their flesh, which is of a loose flabby texture, and ordinary flavour.

1010. "The *health* of fowls is observable in the fresh and florid colour of the comb, and the brightness and dryness of the eyes, the nostrils being free from any discharge, and the plumage of a healthy gloss.

1011. "*The most useful cock* is generally a bold, active, and savage bird, cruel and destructive, in his fits of passion, if not well watched to his hens, and even to his own offspring.—Hens above the common size of their own varieties, are by

no means preferable, either as layers or setters. The indications of *old age* are paleness of the comb and gills, dullness of colour, and a sort of downy stiffness in the feathers, and length and size of their tallons, the scales upon the legs becoming large and prominent.

1012. "*The number of hens to one cock*, four to six, the latter being the extreme number, with a view of making the utmost advantage. Ten, and even twelve hens have been allowed to one cock, but the produce of eggs and chickens under such an arrangement, will seldom equal that to be obtained from the smaller number of hens. Every one is aware that the spring is the best season to commence breeding with poultry, and in truth it scarcely matters how early, presupposing the best food, accommodation, and attendance, under which hens may be permitted to set in January.

1013. "In making the *nests*, short and soft straw is to be preferred, because the straw being long, the hen on leaving her nest, will be liable to draw it out with her claws, and with it the eggs. The hen, it is ascertained, will breed and lay eggs without the company of a cock; of course such eggs are barren.

1014. "*Eggs for setting* should never exceed the age of a month, the newer to be preferred, as nearly of a size as possible, and of the full middle size; void of the circular flaw which indicates the double yolk, generally unproductive, nor should there be any roughness or cracks in the shells.—*Number* of eggs, according to the size of the hen, from nine to fifteen, an odd number being preferable, on the supposition of their lying more close. The eggs to be marked with a pen and ink, and examined when the hen leaves her nest, in order to detect any fresh ones which she may have laid, and which should be immediately taken from her, as they, if at all, would be hatched too late for the brood. It is taken for granted, the box and nest have been made perfectly clean for the reception of the hen, and that a new nest has not been sluggishly and sluttishly thrown upon an old one, from the filth of which vermin are propagated, to the great annoyance of the hen, and prevention of her steady setting.

1015. "*Eggs broken in the nest*, should be cleared away the instant of discovery, and the remaining washed with warm water, and quickly replaced, lest they adhere to the hen, and be drawn out of the nest. If necessary, the hens feathers may also be washed, but always with warm water.

1016. "With respect to the *capriciousness* of some hens in the article of *setting*, it is a risk which must be left to the judgment of the attendant, who has to determine whether or not the hen which appears desirous of setting, may be safely trusted with eggs. Leaving a number of eggs in the nest is an enticement. Very frequently a hen will cluck, and appear hot for incubation, yet after setting over her eggs a sufficient number of hours to addle them, will then desert them: and, probably, in the course of a few days, will be taken with another fit for incubation.

1017. "*Much useless cruelty is too often exercised*, to prevent the hen from setting, when eggs, rather than chickens, are in request; such, for example, as immersing her head, or whole body in water, which I have witnessed with regret, the hen, as soon as dry, running to her nest, although the dipping has been repeated several days following. But, granting nature could be thus put out of her course, it is not probable that eggs would be obtained earlier than by suffering the hen to set, since the improper treatment, and the disappointment combined, are nearly an equal impediment both to laying and setting.

ATTENTION DURING INCUBATION.

1018. "*There is this distinction in the hen:* in some the desire of setting or incubation is predominent, which they will repeat to the fifth or sixth time in the year, to their emaciation or almost destruction: in others, the desire is so light, that they will probably set but twice, or even once in the season, and then not steadily. It is for the skilful breeder to take advantage of this variation of quality, the one kind furnishing plenty of eggs for the other to set upon.

1019. "*It is proper to place corn and water beside the setting hen*, whenever it may appear necessary, withdrawing them as soon as she is satisfied, not only to encourage steadiness of incubation, but to support the constitution of those, in which the natural excitement is so powerful, that they will remain several successive days upon the nest, at the risk of famishing. I have had instances of hens of this description fainting outright, and appearing as dead, on their final leaving the nest with the chickens, in a state of total emaciation, having, probably, not eaten or drank, more than once in three or four days, during the *term* of their incubation, *twenty-one*

days. The plan of feeding in the nest, should be invariably pursued with all frequent setters."

MANAGEMENT OF THE CHICKENS.

1020. "*The chickens first hatched,* (continues MOWBRAY,) are to be taken from the hen, lest she be tempted to leave her task unfinished. Those removed may be secured in a basket of wool or soft hay, and kept in a moderate heat; if the weather be cold, near the fire. They will require no food for many hours, even four and twenty, should it be necessary to keep them so long from the hen. The whole brood being hatched, the hen is to be placed under a coop abroad, upon a dry spot, and, if possible, not within the reach of another hen, since the chickens will mix, and the hens are apt to maim or destroy those which do not belong to them.

1021. "*The first food,* split grits, all watery food, soaked bread, or potatoes, improper. Eggs boiled hard, or curd chopped small, much approved as first food. Their water should be pure and often renewed, and there are convenient pans made in such forms, that the chickens may drink without getting into the water, which often, by wetting their feet and feathers, benumbs and injures them; a basin whelmed in a pan of water, will answer the end, the water running round it.

1022. "There is no necessity for cooping the brood beyond two or three days, but they may be confined as occasion requires, or suffered to range, as they are much benefitted by the scratching and foraging of the hen. They must not be let out too early in the morning, or whilst the dew remains upon the ground, far less be suffered to range over wet grass, one common and fatal cause of disease. Another caution is of the utmost consequence, to guard them watchfully against sudden unfavourable changes of the weather, more particularly if attended with rain. Nearly all the diseases of gallinaceous fowls arise from cold moisture.

1023. "*For the period of the chickens quitting the hen,* there is no general rule, the most certain is when the hen begins to roost, leaving them; if sufficiently forward, they will follow her; if otherwise, they should be secured in a proper place, the time having arrived when they are to associate with the young poultry, as nearly of their own age and size as possible, since the larger are apt to overrun and drive from their food the younger broods."

1024. "COBBETT says:—"The hen should be *exceedingly well fed* too, while she is *setting* and *after* she has hatched; for though she does not give *milk*, she gives *heat;* and let it be observed, that as no man yet saw healthy pigs with a poor sow, so no man ever saw healthy chickens with a poor hen. This is a matter much too little thought of in the rearing of poultry; but it is a matter of the greatest consequence.—Never let a poor hen set; feed the hen well while she is setting, and feed her most abundantly when she has young ones; for then her labour is very great, she is making exertions of some sort or other during the whole twenty-four hours; she has no rest, is constantly doing something or other to provide food or safety for her young ones."

TO PROMOTE LAYING.

1025. "To promote *fecundity* and great laying in the hen, nothing more is necessary than the best corn, and fair water.

1026. "*Oats* are recommended to forward and promote laying in hens; and are deemed superior for fattening both poultry and hens.

1027. "*Sun flower* seed has been periodically recommended with high commendations, as food for poultry, sheep and pigs." *Mowbray.*

1028. "*White cabbages* chopped up are very good in winter for all sorts of poultry."—*Cobbett.*

TO FATTEN FOWLS.

1029. "*Fowls should be put to fat*, about a fortnight before they are wanted to be killed. The best food is meal wetted with milk, but not wetted too much. They should have clear water to drink, and it should be frequently changed. Crammed fowls are very nasty things: but "*barn door*" fowls, as they are called, are sometimes a great deal more nasty. *Barn door* would, indeed, do exceedingly well; but it unfortunately happens that the stable is generally pretty near to the barn.—And now let any gentleman who talks about sweet barn door fowls, have one caught in the yard where the stable is also.—Let him have it brought in, killed, and the craw taken out and cut open. Then let him take a ball of horse dung from the stable door; and let his nose tell him how very small is the difference between the smell of the horse dung, and the smell of the craw of this fowl. In short, roast the fowl, then pull aside the skin at the neck, put your nose to the place, and you

will almost think that you are at the stable door. Hence, the necessity of taking them away from the barn door a fortnight at least, before they are killed. We know very well that ducks, that have been fed upon fish, will scent a whole room, and drive out of it all those who have not pretty good constitutions."—*Cobbett.*

ART.—CVI.—CAPONS.

1030. If you are desirous of knowing how to make capons, let me advise you to go to a neighbour's and learn; for it would take up many pages in attempting to explain that, which when you have finished reading, you will perhaps know as much about as you did when I commenced. In short, you must see the operation performed, for all the writings will not explain it to you so satisfactorily, as seeing it yourself done once only.

1031. MOWBRAY quotes the following remarks from CUVIER'S work:—"Instead of being melancholy, abashed, and humiliated, the capon assumes a bold, lofty, and triumphant air; and such is the influence of audacity over all animals, that this borrowed courage completely improves on the cocks and hens, and prevents them from disturbing him in the fulfilment of his charge. At first, he is a little awkward in the exercise of his office. His ambition in imitating in his gait, the majesty and dignity of the cocks, makes him carry his head too stiff, and prevents him from seeing the chickens, which he sometimes thus inadvertantly tramples under foot. But experience soon teaches him to avoid such mishaps, and accidents of the same kind do not occur again. As his voice is not so expressive as that of the hen to engage the chickens to follow and assemble near him, this deficiency has been supplied by attaching a little bell to his neck. When he is once instructed to conduct chickens in this way, he always remains capable of doing it; or, at all events it is very easy to bring him back to the habit of it when required."

1032. "The *capon*, or castrated cock, has ever been esteemed one of the greatest delicacies, preserving the flavour and tenderness of the chickens, with the juicy maturity of age.

the flesh yielding a rich and good chyle, and without any tendency to inflammation. Capons, however, are usually crammed, and made excessively fat, perhaps to the verge of disease, in which state their flesh is neither so delicately flavoured, nor probably so wholesome as when more naturally fed." *Mowbray on Domestic Poultry.*

ART. CVII.—TURKEYS.

1033. MOWBRAY says:—"The *true black* Norfolk turkey is esteemed superior to all others."

1034. The *white* and *copper coloured* are degenerated species.

1035. "One turkey cock (continues the above writer,) is sufficient for six hens. Whilst the hen is setting, the absence of the cock is no loss, as he will sometimes find the opportunity of tearing the hen from her nest, and in the struggle, of destroying the eggs.

1036. "The hen will *cover*, according to her size, from nine to fifteen *eggs*, and unless attended to, will perhaps steal a nest abroad in some improper place. The turkey hen lays a considerable number of eggs in the spring, to the amount of eighteen to twenty-five, and upwards, and her term of incubation is thirty days. She is a most steady setter, and will sometimes continue upon her eggs until almost starved, rather than quit her nest: hence, the necessity of constant attendance, with both victuals and water. She is also a most affectionate mother; and that most curious and accurate observer, BUFFON, remarks her soft and plaintive cry, with her different tones, and inflections of voice, expressive of her various feelings.

1037. "The above remarks, however, of BUFFON, are to be received with a due degree of circumspection, since I have known unsteady setters among turkeys, and however affectionate, the turkey hen, from her natural heedlessness and stupidity, is the most careless of mothers, and being a great traveller herself, will drag her brood over field, heath, or bog, never casting a regard behind her to call in her straggling chicks, nor stopping whilst she has one left to follow her."

1038. COBBETT says:—"It is best to breed them under a

common hen; because she does not *ramble* like a hen turkey; and it is a very curious thing, that the turkeys bred up by a common fowl, *do not themselves ramble much when they get old.*"

1039. MOWBRAY advises, "the *chicks* to be withdrawn from the nest as soon as hatched, and kept very warm. The turkey, from setting so close and steadily, hatches more regularly and quickly than the common hen.

1040. "The hen and brood must be *housed* during a month or six weeks, dependant upon the state of the weather."

1041. "As to the *feeding* of them (remarks COBBETT,) when young, various nice things are recommended. Hard eggs chopped fine, with crumbs of bread, and a great many other things; but that which I have seen used, and always with success, and *for all sorts of poultry*, is milked *turned into curds.* This is the food for young poultry of all sorts. Some should be made fresh every day; and if this be done, and the young turkeys kept warm, and especially from wet, not one out of a score will die. When they get to be strong, they may have meal and grain, but still they always love the curds. When they get their *head feathers*, they are hardy enough; and what they want then is *room* to prowl about."

1042. "Superfluous moisture, whether external or internal, (says MOWBRAY,) is death to the chickens; therefore, all slop victuals should be rigorously avoided. Artificial worms or boiled meat pulled into strings, is beneficial for every other species of chicks, equally with the turkey.

1043. "*The weather being remarkably favourable*, we have usually cooped the hen abroad, about two hours in the forenoon, in a moderately warm sun, whilst the chicks were only three or four weeks old, great care being taken that they did not stray far from the coop. Six weeks is the longest period of confinement within doors, after which it is more safe to coop the hen for another fortnight, that the chicks may acquire strength abroad, sufficient to enable them to follow the dam, they being naturally inclined to stray too far, and to weaken themselves by fatigue. When full half grown and well feathered, they become sufficiently hardy, and in a good range, will provide themselves throughout the day, requiring only to be fed at their out-letting in the morning, and on their return at evening: the same in spacious farm yards; if confined to the poultry yard, their food and treatment is similar to that of the common cock and hen."

1044. "A letter in the *Sporting Magazine*, signed RUSTICUS, observes:—"At two periods of their lives, turkeys are very apt to die, viz:—about the third day after they are hatched, or when they throw out what is called red head, which they do at about six or eight weeks old.

"I would not recommend a second hatch, as the chance of rearing the young ones is very uncertain; they are seldom strong enough to stand the cold nights in autumn."

ART. CVIII.—GUINEA HENS.

FROM MOWBRAY ON DOMESTIC POULTRY.

1045. "*The Pintada, or Guinea hen*, has been said to unite the character and properties of the pheasant and the turkey. It is about the size of the common hen, but standing high upon its legs, gives it the appearance of a larger size. The back is round, with the tail turned downwards, like the partridge. It is an active, restless, and courageous bird, and will even attack the turkey, although so much above its size.—The Guinea fowls assimilate perfectly with the common species, in habits and in kinds of food; but have this peculiarity, that the cocks and hens are so nearly alike, it is difficult to distinguish them. They have also a peculiar gait and cry, or chuckling.

1046. "There is sometimes, but not invariably, a distinction of colour in certain parts, between the cock and hen pintada; the manner and gait of the cock, however, soon distinguish him. However, long domesticated, these birds retain some part of their original wild habits, and will stray in search of a place in which to drop their eggs, without any apparent solicitude as to their security. They lay an abundance of eggs, smaller than those of the common hen, speckled, resembling wild, rather than common eggs. It sometimes happens that they are everlasting layers, in which case, and indeed generally, it is most profitable to hatch pintadas under a common hen, which will cover an additional number of those small eggs. The chicks are extremely tender, and should not be hatched too early in the spring; a

sudden change of the wind in March to the north-east, has destroyed many a brood.

1047. "*Guinea fowls* are not so white of flesh as the common, but more inclined to the pheasant colour; in quality, short and savoury, and easy of digestion. They are very prolific, and their eggs nourishing and good. These fowls are in season for the table when game is going out; namely, from February to June."

ART. CIX.—THE PEACOCK.

1048. "Exclusive of the consideration of ornament to a poultry yard, the peacock is very useful for the destruction of all kinds of reptiles; but at the same time, some peacocks are said to be vicious, and apt to tear to pieces and devour young chicks and ducklings, suffered to be within their reach. They are also destructive in a garden.

1049. "*Their age* extends to twenty years, and at three the tail of the cock is full and complete. The cock requires from two to four hens, and where the country agrees with them, they are very prolific. They are granivorous like other domestic fowls.—*Mowbray.*

ART. CX.—DUCKS.

1051. "*No water to swim in* (says COBBETT,) *is necessary to the old*, and is injurious to the very young. They never should be suffered to swim till more than a month old. The old duck will lay, in the year, if well kept, ten dozen eggs; and that is her best employment; for common hens are the best mothers. It is not good to let young ducks out in the morning to eat slugs and worms; for though they like them, these things kill them if they eat a great quantity.

"When young, they should be fed upon meal, or curds, and

kept in a warm place in the night time, and not let out early in the morning."

1052. MOWBRAY remarks:—"*The duck will cover* from eleven to fifteen eggs; her term of incubation thirty days.—One drake to five ducks. They begin to lay in February, and unless watched, will lay her eggs abroad and conceal them. The duck on leaving her nest, will cover the eggs with leaves, down, or anything within her reach, as will the goose sometimes; the hen never.

1053. "*The duck generally lays by night*, or early in the morning, seldom after ten o'clock, with the exception of chilling and comfortless weather, when she will occasionally retain her egg until mid-day, or afternoon. Accustomed to a nest she will not forsake it.

1054. "*During incubation*, the duck requires a secret and safe place, rather than any other attendance, and will, at nature's call, cover her eggs and seek her food, and the refreshment of the waters.

1055. "*On hatching*, there is not often a necessity for taking away any of the brood, barring accidents; and having hatched, let the duck retain her young upon the nest her own time. On her moving with her brood, prepare a coop, upon the short grass, if the weather be fine, or under shelter if otherwise; a wide, flat, dish of water, often renewed, standing at hand; barley or any meal, (*Indian corn meal*,) the first food. In rainy weather particularly, it is useful to clip the tails of the ducklings, and the surrounding down beneath, since they are else apt to draggle and weaken themselves.—The duck should be cooped at a distance from any other.

1056. "*The period of her confinement to the coop*, depends on the weather and the strength of the ducklings. Duck eggs are often hatched by hens, when ducks are more in request than chickens; also as in unfavourable situations, are the more easy to rear, as more hardy."

1057. *A writer in the Southern Agriculturist*, gives the following directions for raising ducks; he says:—

"*Ducks when just hatched*, are always inclined to fever, from their pinion wings coming out too soon. This acts upon them as teething does on children. The young ducks should, consequently, be kept from every thing which may have a tendency to create cold in them. To prevent this, therefore, I always allow my young ducks as little water as possible.—

In fact, they should only have enough to allay their thirst, and should, on no account, be permitted to play in the water.

1058. "*If the person lives near the city*, liver and lites should be procured; and these should be boiled and chopped up fine, and given to the young ducks. Or if fish, crabs, oysters, or clams, can be procured, these should be given. In case none of these can be got, all the victuals should be boiled before feeding. Boiled potatoes mixed with hominy are also excellent. Half of the ducks which are lost, are because raw food is given them. To sum up all in a word—if you wish to raise almost every duck that is hatched, give them little water, and feed them on no food which is not boiled."

TO FATTEN DUCKS.

1059. "*When you come to fatten ducks*, you must take care that they get at *no filth* whatever. They will eat garbage of all sorts; they will suck down the most nauseous particles of all those substances which go for manure. A dead rat three parts rotten is a feast to them. For these reasons I should never eat any ducks, unless there were some mode of keeping them from this horrible food.

1060. "I buy a troop when they are young, and put them in a pen, and feed them upon oats, cabbages, lettuces, and water, and have the place kept very clean. My ducks are, in consequence of this, a great deal more fine and delicate than any others I know of." (See paragraph 1029.)—*Cobbett.*

ART. CXI.—GEESE.

1061. "*They can be kept to advantage, says* COBBETT, only where there are green commons, and there they are easily kept; live to a very great age; and are amongst the hardiest animals in the world."

MOWBRAY observes:—"A goose on a farm in Scotland, of the clearly ascertained age of eighty-one years, healthy and vigorous, was killed by a sow whilst setting over her eggs; it was supposed she might have lived still many years, and her fecundity appeared to be permanent. Other geese have been proved to reach the age of seventy years.

1062. "*A gander and five geese* comprise a single breeding stock. The goose sets upon her eggs from twenty-seven to thirty days, covering from eleven to fifteen eggs. A nest should be prepared for her in a secure place, as soon as carrying straw in her bill, and other tokens, declare her readiness to lay.

1063. "*The earliness and warmth of the spring*, are the general causes of the early laying of geese, which is of consequence, since there may be time for two broods within the season, not, however, a common occurrence; and which happening successively for two or three seasons, has occasioned some persons, formerly, to set a high price upon their stock, as if of a peculiar and more valuable breed than the common.—The method, however, to attain this advantage, is to feed breeding geese high throughout the winter, with solid corn.

1064. "*With a good gander present*, no mischief can happen to the setting geese without extraordinary alarm, he standing centinel at the chamber door of his wives. With respect to feeding the goose or duck upon the nest, it may be occasionally required, but is not a thing of much account, since they will generally repair to the water sufficiently often, from their natural inclination. The goose will not quit until she has completed her hatch, nor will it be very practicable to take any of the goslings from her, were it necessary, as she is too strong and resolute, and might kill some in the struggle."

1065. "*When the young ones are hatched*, (COBBETT advises,) they should be kept in a warm place for about four days, and fed on meal mixed, if possible with milk; and then they will begin to graze. Water for them, or for the old ones to swim in, is by no means necesssary, nor perhaps even useful. Or how is it, that you see such flocks of fine geese all over Long Island, where there is scarcely such a thing as a pond or a run of water?"

1066. "*For the first range*, (continues MOWBRAY,) a convenient field containing water is to be prepared to an extensive common, over which the gulls or goslings are dragged by the goose, until they become cramped or tired, some of them squatting down and remaining behind at evening, which the good housewife sees no more.

1067. "*The young becoming pretty well feathered*, will also be too large to be contained, or brooded beneath the mother's wings, and will then sleep in groups by her side, and must be

supplied with good and renewed straw beds, which they convert into excellent dung.

1068. "*Being now able to frequent the pond*, and range the common at large, the young geese will obtain their living, and few people favourably situated, allow them any thing more, excepting the vegetable produce of the garden.

1069. "*It has, however, been my constant practice*, always to dispense a moderate quantity of any solid corn, or pulse at hand, to the flocks of store geese, both morning and evening, on their going out and their return, in the evening more especially, together with such greens as chanced to be at command: cabbage, sliced carrots, and turnips. By such full keeping, our geese were ever in a fleshy state, and attained a large size; the young ones were also forward and valuable breeding stock."

TO FATTEN GEESE.

1070. "*Geese are raised by grazing;* but to *fat* them something more is required. Corn of some sort, or boiled Swedish turnips. Some corn, and some raw Swedish turnips, or carrots, or white cabbages, or lettuces, make the best fatting.

1071. "*It is a very great error to suppose* that what is called a *Michaelmas goose is the thing*. Geese are in general, eaten at the age when they are called green geese; or after they have got their full and entire growth, which is not until the latter part of October. Green geese are tasteless squabs, loose flabby things; no rich taste in them; and in short, a very indifferent sort of dish. The full grown goose has solidity in it; but it is hard, as well as solid; and in place of being rich, it is strong. Now there is a middle course to take; and if you take this course, you produce the finest birds of which we can know any thing. For three years, I have had the finest geese that I ever saw, or ever heard of. I have bought from twenty to thirty every one of these years. I take them off the common late in June, or very early in July. I put them in a pen, about twenty feet square, where I keep them well littered with straw, so as for them not to get filthy. They have one trough, in which I give them dry oats, and they have another trough, where they have constantly plenty of clean water. Besides these, we give them two or three times a day, a parcel of lettuces out of the garden. We give them such as are going to seed generally; but the better the lettuces are, the better the geese.

1072. "*If we have no lettuces to spare*, we give them cabbages, either loaved or not loaved; though observe, the white cabbage as well as the white lettuce, that is to say, the loaved cabbage and lettuce, are a great deal better than those that are not loaved. This is the food of my geese. They thrive exceedingly upon this food. After we have had the flock about ten days, we begin to kill, and we proceed once or twice a week, till about the middle of October, sometimes later. A great number of persons who have eaten of these geese, have all declared that they did not imagine that a goose could be brought to be so good a bird.

1073. "*These geese are altogether different* from the hard strong things, that come out of the stubble fields, and equally different from the flabby thing called a green goose. I should think that the cabbages or lettuces, perform half the work of keeping and fatting my geese; and these are things that really cost nothing. Every gentleman has a garden. That garden has, in the month of July, a wagon load at least of lettuces and cabbages to throw away. Nothing is attended with so little trouble as these geese. There is hardly anybody that has not room for the purposes here mentioned.

1074. "*The reader will be apt to exclaim*, as my friends very often do, "COBBETT'S geese are all *swans*." Well, better that way, than not to be pleased with what one has. However, let gentlemen try this method of fatting geese. It saves money, mind, at the same time. Let them try it; and if any one, who shall try it, shall find the effect not to be that which I say it is, let him reproach me publicly with being a deceiver." *Cobbett.*

ART. CXII.—PIGEONS.

1075. "*The pigeon is recorded* as one of the most ancient inhabitants of all climates, those excepted in the vicinity of the poles; it prospers abundantly in temperate regions, but in a still higher degree, under the burning sun of the tropics, no heat being too ardent for its natural constitution.

1076. "*Pigeons often fly to a great distance for their food*,

and when they can find corn to eat, seldom prey upon any thing else.

1077. "*The pigeon is monoganous*, that is, the male attaches and confines himself to one female, and the attachment is reciprocal; the fidelity of the dove to its mate being proverbial.

1078. "*Young pigeons are termed squeakers*, and begin to breed at about the age of six months, when properly managed: their courtship and the well known tone of voice in the cock, just then acquired and commencing, are indications of their approaching union. Nestlings whilst fed by the cock and hen, are termed *squabs*, and are at that age sold and used for the table.

1079. "*The dove house pigeon* is said to breed monthly, being well supplied with food, more particularly when the ground is bound by frost, or covered with snow. At any rate, it may be depended on, that pigeons of almost any healthy and well established variety, will breed eight or ten times in the year; whence it may be conceived, how immense are the quantities which may be raised.

1080. "*The dove cote or pigeon loft*, as to its situation or extent, will necessarily depend on convenience; one *general rule*, however, must be invariably observed,—that every pair of pigeons have two holes, or rooms, to rest in. Without this indispensable convenience, there will be no security, but the prospect of constant confusion, breaking of eggs, and destruction of the young. Pigeons do well near dwellings, stables, &c., or their proper place is in the poultry yard.

1081. "*The front of the dove cote or pigeon room*, should have a south-west aspect; and if a room be selected for the purpose, it is usual to break a hole in the roof of the building for the passage of the pigeons, which can be closed at convenience. The platform which is laid by the carpenter at the entrance, for the pigeons to alight and perch upon, should be painted white, and renewed as the paint wears off, white being a favourite colour with pigeons, and also most conspicuous as a mark to enable them to find their home. The boxes or nests also should be so coloured, and renewed as necessary, for which purpose lime and water will be sufficient. (See white wash, paragraph 1155.)

1082. "*Cleanliness is one of the first* and most important considerations: the want of it in a dove cote, will soon render the place a nuisance not to be approached, and the birds, both

young and old, will be so covered with vermin, and besmeared with their own excrement, that they can enjoy no health or comfort, and mortality is often so induced.

1083. "To return to the *room* or *loft;* the shelves should be placed sufficiently high, for security against vermin, a small ladder being a necessary appendage. The usual breadth of the shelves is aoout twenty inches, with the allowance of eighteen between shelf and shelf, which will be sufficient not to incommode the tallest pigeons. A partition is to be fixed between each nest.

1084. "*To match, or pair a cock and hen,* it is necessary to shut them up together, or near and within reach of each other; and the connexion is generally formed in a day or two.—Various rules have been laid down, by which to distinguish the cock from the hen pigeon; but the masculine forwardness and action of the cock, is for the most part distinguishable.

1085. "*Incubation.*—The great increase of domestic pigeons does not proceed from the number of eggs laid by them, but from the frequency of their hatching. The hen lays but two eggs, and immediately proceeds to incubation. Having laid her first egg, she rests one day, and on the next, lays her second egg. They usually stand over the first egg, not setting close until they have two, whence both the young are hatched nearly at the same time; there are some exceptions, however, to this rule of nature, and the hen having sat close at first, one young bird may be hatched a day or two before the other. They often spoil their first eggs from inexperience.

1086. "*The period of incubation* is nineteen or twenty days from laying the first egg, and seventeen or eighteen from the last. The labour of setting is equally divided between the cock and hen, excepting that the hen always sets by night. She is relieved in the morning by the cock, which sets during the greater part of the day. The business of feeding the young is also divided between the parents; and the cock has often brought up the young, on the accidental loss of its mate.

1087. "*Food.—Pigeons are entirely granivorous,* and very delicate and cleanly in their diet; they will sometimes eat green vegetables, in particular warm salads, and are extremely fond of seeds. Although so generally benefitted by salt, an excess of it is fatal, as it is also to vegetation, promoted as that is by a moderate quantity."—*Mowbray.*

1088. *Clay, salt, and gravel,* mixed and made into balls for them to peck, is highly recommended.

ART. CXIII.—BEES.

1089. "*Every farmer*, says MR. COTTON, *should keep bees*; a few swarms to furnish honey for his own use if no more.—They cost little forage wherever the wild flowers grow, have no ideas of distinction in landed property, and furnish the individual who has a taste for studying the habits of insects, or observing the wonders of that power we call instinct, an ample field of surprise and gratification."

1090. "*The bee, or honey fly, according to naturalists*, is of the fourth order of *insects*, and has four wings; and the community or hive, contain three kinds; namely, the queen, or mother bee, the drone, and the working bee.

1091. "*The queen lays the eggs*, which are afterwards fecundated by the drones. Her body contains an *ovarium* or egg bag, of which certain *insecto anatomists*, have actually or fancifully discovered two, terminating in a common channel, which two are filled during the breeding season. Her fruitfulness is almost beyond conception, and she continues to deposit eggs, as long as a cell remains vacant for them. The title of queen is a mere fiction; she would be, with far more propriety, styled mother of the bees, as she really is; for although her indispensable existence obtains for her a kind of royal state, she possesses not the smallest power above any other individual of the hive, or any kind of direction in its concerns.

1092. "*As a proof of the veneration* of these communities for royalty, should more than one queen remain after the swarms have gone off, the supernumeraries are infallibly and loyally massacred. The young queen never lay eggs in the parent hive, but depart with the swarms, in order to find their place in a new establishment.

1093. "*The drone or male bee is the largest;* full at the extremity or tail, which the wings cover, excepting a small angle, which has a blackish appearance. Beneath are too small protuberances, which are the supposed indications of the masculine gender. The drome, as every one knows, is left by nature unarmed, the organs of generation in him being found in the place of the sting in the working bee. Their sole destined employment being the propagation of their kind, for which they are furnished with food from the common stock, towards the collection of which they never give, nor are expected to give any assistance.

1094. "*The fate of the drone bees*, is a singular proof of the instinctive predominance of the interested motive in animal nature, which may be traced equally to human nature in the savage state, and before the asperities of that state are mollified, and worn away by the expansion and culture of the reasoning faculty.

1095. "The *drones* are hatched at the beginning of the season, and having completed the duty of fecundating the eggs, they are all to a unit, towards the end of the same season, destroyed by their brethren the working bees, and their carcasses dragged from the hive.

1096. "The *mode* in which the execution is perpetrated by the bees, is said to be by driving the victims from their combs, and weakening them by starvation, after which they are finished by being bitten beneath the roots of the wings. This carnage continues during three or four days, and is seen in front of the hives. Several bees at once seize upon a drone; he makes no resistance, and they do not quit him until they have fulfilled nature's mission.

1097. "*The life of the drone thus extends*, upon the average, but from April to August, or September. The drone is particularly distinguished by the humming noise which he makes in his flight. The number of them in a hive, proportional to its size, and to the number of working bees, is from four to five hundred, to upwards of a thousand.

1098. "*The common mule or labouring bee*, is smaller than the drone, and its most obvious distinction is its complete snug covering, to nearly the extremity of the tail, by its wings.—Having no concern in generation, this bee is of no sex, neither male nor female. Its province is solely that of labour, of which it performs every species which is needful for the community. Gathering in the harvest from the flowers, constructing and filling the combs, feeding the young, murdering the useless, and preserving the hive in that state of cleanliness and neatness, in which these industrious insects take so great delight.

"Accidents of animals stung to death by these furious and vindictive insects, have ever been of periodical occurrence.

1099. "*Keepers of bees* should always have at hand pure olive oil, as a remedy for the sting of those insects, to be dropped instantly on the wound: or Venice treacle, which some mix with oil. The juice of onions and salt mixed, are also used for the same purpose.

TO ESTABLISH AN APIARY.

1100. "*The usual methods* of establishing an apairy are, either by the purchase of stocks, or of swarms—or in some instances, by the settling of a vagabondizing swarm in your garden, which by the country housewifes is always considered as a real *God-send.*

1101. "*A new hive to every swarm*, ought to be the leading principle of every keeper of bees, and it is the want of due attention to this point, that so many failures occur in the management of an apiary.

1102. "*The original colour of the combs is white*, and it follows, therefore, that in proportion to the difference of shade which the combs present, so is the age of the hive. In old hives the colour of the combs approaches to an absolute black, and therefore, all idea of its purchase should be rejected. A golden colour may be considered as the medium, and if the side combs appear filled with honey, which may be known by the cells being sealed, little risk can be run in the purchase of the hive.

1103. "*The object next to purchase*, is the *removal* of the hives homewards, which is always effected most conveniently and safely by water carriage. In those cases wherein recourse must be had to land carriage, it is managed by two men, having a pole between them, upon which the hive wrapped in a sheet is slung. But the most convenient method of removal, is by a common hand barrow, by means of which several hives may be removed at the same time; previously to which, however, the utmost caution should be used in stopping up every crevice or aperture, by which a single bee can make its escape.

1104. "*Although the bees may swarm several times in a season*, it is found, with a few exceptions, that the first swarm only is worth preserving, and as the first labour of these wonderful insects is to sweep and garnish their dwellings, and remove all obstacles to their industry, as much as possible of this labour must be done for them, by rubbing the interior of the hive with a hard brush.

1105. "*The months of May and June* are the periods of swarming, but the precise departure of the swarm, depends in a great measure on the state of the weather.

1106. "*The swarming season*, is the most important and anxious period of the labours of the apiarian, for on its successful issue depends the chief part of his profit. It should

be the aim of every keeper of bees, to make himself thoroughly acquainted with the chief symptoms of the departure of a swarm, for his ignorance on this point will expose him to a certain loss. Circumstances may possibly so combine, as that the most experienced apiarian may be mistaken in his calculations, but in the majority of cases, the prognostics of a swarm are so decisive, that the precise period of its departure can be definitely fixed. The vacating of a hive may be considered as the preliminary symptom as it bespeaks an active and increasing population; and the bustling disposition of the drones about midday, is confirmatory of the approaching swarm. The surest criterion, however, is the clustering of the bees on the front of the hive; and whenever this circumstance takes place, it becomes the proprietor to be on the alert, and keep a strict watch on the hive, from nine A. M., till two P. M.

1107. "Previously to the swarm leaving the hive, the bees are observed in a great bustle about the entrance—running in and out of the hive, and on any one approaching it, the bees evince an uncommon degree of irascibility, attacking indiscriminately any object that presents itself.

1108. "A small hive generally swarms earlier than a large one. The rise and departure of a swarm is a most curious and gratifying, and to a degree, anxious spectacle to the proprietor; but to any unfortunate animal upon which the swarm may alight, almost certain destruction, against which numerous examples ought to excite every possible caution.

"Swarming generally continues between two and three weeks."—*Mowbray.*

HIVING BEES.

1109. "A writer in the "*Mechanic and Farmer*," gives the following method of "securing new swarms of bees when they leave the old hive."

1110. "*Cut an evergreen about six or eight feet long*, and trim off all the branches on one side, close to the tree, so that it may be laid flat on the ground, the lower end, or butt, is sharpened like a stake, and set in a hole made by an iron bar in the ground, about ten or fifteen feet in front of the hives.—Swarms will very seldom seek any other resting place when a bush like the above is at hand. When a swarm leaves the hive, I say nothing, but stand and look on, until they become still and quiet on the bush. I then carefully raise the bush

from the hole, lay it flat on the ground, and place the hive over them. If the limbs on the upper side interfere, I press the hive down, and lay a stone or some heavy substance on to keep it in its proper place, till the swarm takes possession, which is generally in ten or fifteen minutes. In this way I have never lost a swarm, and have frequently hived a swarm and removed them to the bee house, among the old hives, in one hour from the time of their leaving the hive." But with a bee house of the following description, all this trouble and time may be saved.

"*The bee house* should consist of a number of cells, about the size of small bee hives, or about from twelve to fifteen inches square, and from fifteen to eighteen inches deep, arranged like the pigeon holes in a writing desk, or a number of bee hives piled upon their sides. The number of these cells may be according to the taste of the builder: say four rows up and down, and ten long, making forty cells. These should be enclosed in a tight house, of sufficient dimensions to allow a person to pass freely before and behind them, and they should be supported at such a distance from the floor as to be convenient for examination. In front of these, there should be a number of small holes made through the side of the building, sufficient for the bees to pass in and out. In the back end of each cell, there may be a slide, or door, for the purpose of taking out the honey. The building, if made of wood, should be carefully made, not allowing cracks or joints, through which mice could enter, and a door in the rear for a keeper to go in and out at. In these cells a number of swarms of bees are introduced, and it is said that they work as well as in hives of common construction—that they never leave the house by swarms, as long as there is an empty cell for the young colony to emigrate to. There is no necessity for destroying the bees to get the honey. They are not troubled with the moth, where the house is tightly made, and where the door is well secured, they are not so liable to be robbed by man."—*Genessee Farmer.*

GATHERING AND PRESERVING HONEY.

1111. "*Depriving, or gathering the harvest* of honey from the hive, should be performed in August, immediately after the swarming season, for which HUISH gives the satisfactory reason, that the bees, from that period to October, may replenish the vacuum left in the hive. The improved hive is far

the most, perhaps the only convenient form for this practice, which is sufficiently simple and easy. Ascertain the weight of the hive, and the quantity of honey comb proper to be extracted, and commence the operation as early in the evening as the bees shall be at rest. Revert the full hive, and place an empty one of precisely the same diameter over it; being fitted that the bees cannot escape; tie a large sheet or cloth round them where they join. Beat the sides of the full hive with the hand or stick, in those parts to which the combs are attached, parallel with the entrance. The bees alarmed, will all ascend into the new hive in a few minutes, which will be known by a general humming, and the hive may then be placed upon the pedestal. The old hive must then be taken in doors, and the honey comb cut out *secundem artem*, and to the proper extent, leaving the bees a winter store, that is the weight of the hive should not be under eighteen or twenty pounds.

1112. "*Attention should be paid*, not to cut into two or three combs at once, but having commenced cutting one, to pursue it to the top of the hive. This business finished, the hive should be inspected and made perfectly clean. It may now be returned to its pedestal, and the other hive containing the bees being reversed, the old one placed over it, and being so left till morning, the bees will be then found in their native domicile.

1113. "*The common mode of destroying bees by suffocation*, in order to take the whole produce of the hive, is as follows. The easiest method of performing this operation is to dig a hole, in which put a bundle of matches, or pieces of linen impregnated with sulphur, which having ignited, place the hive, covered by a thick cloth, over it late in the evening, when all the bees have returned from the fields, and the sulphureous exhalations will prove their instant death."—*Mowbray.*

1114. Mr. Cotton says,—"never kill a bee." The bee owner has in the *fungus maximus*, or common *puff ball*, a powerful instrument ready to his hands, by which he is able to adopt a more humane and profitable mode of treatment.

The smoke of this fungus, when dried so as to hold fire, has a stupifiying effect on bees, and renders them as harmless as brimstone does, without any of its deadly effects. By means of this, weak swarms, which would not live through winter, may be united to strong stocks.

"Mr. Cotton *stated it as a fact*, borne out by experiments, that a hive thus doubled, will not consume more honey in the winter, than a stock in its natural state."

TO STORE OR PRESERVE HONEY.

1115. "To store or preserve honey, the vessels or jars in which it is kept, should be well and tightly covered or corked, and the store room be quite dry, as honey imbibes damps, by which it is deteriorated in quality, and in the end turns sour. Honey is often adultered with flour and similar substances to increase its weight.

TO CLARIFY HONEY.

1116. "*To clarify honey*, place the vessel containing the honey in hot water, and take off the scum as long as any arises, afterwards stop close."—*Mowbray.*

MODE OF EXTRACTING WAX FROM HONEY COMB.

1117. "*Have on the fire an open vessel of boiling water*, and standing by the fire an open vessel of cold water; put the comb, close tied in a canvass bag, into the boiling water, and repeatedly squeeze it down with a large wooden stick or spoon; the wax will come through the bag, and swim on the top of the water; skim it off and put it into the vessel of cold water; by repeatedly squeezing the bag and skimming, every particle of wax is obtained; when congealed on the cold water, it may be taken off and melted, and cast into moulds, of any convenient shape for sale or use."

Art. CXIV.—CARE OF HORSES.

1118. "*Profuse sweating* should always be avoided. And when a horse is much warmed by exercise, he should not be exposed to cold air nor night dew, and much less to rain and snow. If he cannot be instantly rubbed down and housed when warm, he should be covered with a blanket; and he should always have a dry stable, and be well littered. The neglect of these precautions may bring on incurable disorders.

1119. "Horses should not be too much deprived of the

liberty of motion, as they too often are. Close confinement after hard labour, will be apt to abate their circulations too suddenly, make them chilly, and stiffen their joints. To be deprived of motion is bad for man and beast. Horses, therefore, should not be straightened for room in their stables.

1120. *Stables* should not be so low as to prevent their tossing up their heads as high as they please. Some stables have so little room over head, as to bring horses into a habit of carrying their heads too low; they become afraid to lift them up.

1121. *They should also have room* in their stables to turn their heads to any part of their bodies, that they may defend themselves from the biting of insects, allay, itching, &c.—And their halters should always be so long, and their stables so wide, that they may lie down conveniently. Nor should horses be so placed as to be able to deprive each other of his fodder.

1122. *When horses are kept in stables*, as they generally are in the coldest half of the year, they should be daily dressed, as it is called. The curry comb and the brush should be well used on all parts of their skin, which are covered with hair. This increases perspiration through the pores of the skin, which is necessary to health; and causes the blood to move faster in the veins. This treatment will not only cause them to look better, but they will have better health, and more activity and courage. They will digest their food better, and be better for service. But if rubbing and friction be wholly neglected, or slightly performed, the hair will appear dry and rough; the perspirable matter hardens in the pores of the skin, or remains lodged at the roots of the hair, and has the appearance of a dirty white dust, and sometimes like small scales, attended with itching. More especially is rubbing necessary for horses when they are growing cold, after being sweated by labour. In such cases it should never be omitted.

1123. COLUMELLA observes, "that the bodies of cattle ought to be rubbed down daily, as well as the bodies of men;" and says, "it often does them more good to have their backs well rubbed down, than their bellies well filled with provender."

1124. "*But in warm weather*, it would be best for them that they should not have the confinement of the halter, nor even of the stable. A small spot of feeding ground, if it were only a few rods, adjoining to the stable, and the door left open, that a horse may go in and out alternately as he pleases,

would greatly conduce to the health of the animal. This degree of liberty will be most needful when the flies are troublesome; and be better for him than confinement to a stable that is perfectly dark."—*Complete Farmer.*

1125. "*There are a great many farmers*, who take but poor care of their horses in the winter season. In the short days they have water before dark, and then have to go without until nine or ten o'clock the next morning, or if they have water early in the morning, they will not usually drink, as their time of thirst is past. Horses seldom refuse water after they have eaten their evening meal, though if they do not have it then, they will usually drink but little the next morning until after eating. So if a horse will not drink early in the morning it is no indication that he has not been thirsty the previous evening.

1126. "*They must have water when they need it*, or they will not drink; like men, they do not eat and drink according to fashion and custom.

1127. "It is better in winter for a horse to have a place where he can stand upon the manure, and walk round at ease, than to be confined to a stall and stand on a hard floor. But in this case, as the horse will generally stand in one place to eat, the manure will accumulate under his hind feet so that he will stand uneasy, unless it be levelled frequently, so that it will be as high or higher under his fore feet.

1128. "*Many a farmer's horse* that is now *stupid* and *lazy*, and of a miserable appearance, would under the care of a good hostler, without extra keeping, become so changed in his appearance and spirits, in a few months, though performing the same amount of labor, that his owner would hardly know him."—*Yankee Farmer.*

1129. *Feeding.*—"*Chopped straw mixed with ground grain*, is a common food at certain seasons throughout the *North* and *West*. But like advantages result from chopping any kind of fodder, hay, straw, corn stalks, or husks. The common Dutch cutting box, with one, two, or three blades, is the common instrument used for this purpose. But there are many later inventions, far preferable, saving time and labor. One of these we have tried and found to answer our expectations well.

1130. "*This instrument* (GREEN'S straw cutter,) cuts hay and straw very well, and will cut corn stalks, but not so well, from the chips or cuttings filling up the spaces between the

knives, and requiring to be cleaned out frequently. This is not the case in cutting straw or hay. One of these instruments, on trial before the *Highland Agricultural Society*, managed by one man, cut five hundred pounds in an hour.

"We do not recommend GREEN's straw cutter in preference to any but the common one, for we have had no opportunity of comparing it with any other. Cut your hay, straw, and fodder with the cheapest and best instrument you can obtain—but by all means chop it, and the saving will pay for GREEN's straw cutter in six months."—*So. Cabinet.*

1131. "*Soaking corn to feed horses.*—One of the most successful farmers in our vicinity, informed us a few days since, that he saved at least one third of his corn by the manner in which he fed it out to his horses. He has two hogsheads, or large barrels placed in his cellar, where they are secure from freezing. These he first fills with corn in the ear, then pours in a sufficient quantity of water to cover the corn. After the ears have been thoroughly soaked, he commences feeding, gives to his horses *two thirds* the usual quantity allowed. As one of these hogsheads becomes empty, he refills it; and by the time the other is empty, the one last filled is sufficiently soaked for use. In this way the cobs become so softened, that the horses consume the whole of them, and they are thus made to add fully one third more to his stock of feed."—*Baltimore Farmer.*

1132. "*Cough in horses.*—The *Maine Farmer* says, that the boughs of cedar have been used as a remedy for cough in horses, with complete success. They should be cut fine and mixed with the grain given to the horse."

1133. *Botts*.—Among the worms that lodge in the intestines of all animals, the botts are found, particularly in the stomach of the horse, and are produced by a kind of nit, the egg of a fly; it may be observed in abundance upon the legs and shoulders of a horse, and is easily seen by its yellow colour, and might easily be curried off in time.

1134. *It is at all times a bad practice*, to curry a horse in the stable; worse in time of those nits, mixing with the food in cleaning the curry combs on the trough, instead of which, either from irritation of the skin, or from instinct, the horse bites or licks his hairs, and swallows the greatest part of those nits, which soon hatch in his stomach, grow into botts, and fastening upon the inner coat, often perforate the stomach through.

1135. "*The botts once formed* in larger or smaller quantities, subject the animal to pains, the symptoms of which differ very little from those of the cholic. He looks at his side, lies down, rolls in agony from side to side, and soon dies in most cases, if a prompt remedy is not applied."—*Franklin Farmer.*

1136. "*To make the bott or grub let go his hold,* (observes MR. WALKER, in the "Spirit of the Times,") give the horse a quart of molasses or dissolved sugar, with a quart of milk —in thirty minutes you will find the horse at ease; then pulverize one eighth of a pound of alum, dissolve it in a quart of warm water, and drench your horse—after which, in two hours or less, give the horse one pound of salts, and you will find the botts in his dung. I have never failed. I think this is, after all the speculations and cures I have seen, the only thing that will to a certainty remove the botts.

"The molasses and sweet milk causes the botts to let go, and prey upon the sweetening—the alum contracts him, and the salts pass him off."

1137. *To preserve a horse against botts.*—"Give a horse occasionally a half pint of hard wood ashes mixed in his grain, and sprinkled or given in his drink.

"*Another.*—Give your horse salt freely—as that will, in nine cases out of ten, preserve him from the botts."—*Farmer's Receipt Book.*

1138. "*Scratches are produced from many different causes;* hard riding, dirty stables, legs left wet at night without rubbing, standing in his manure, or mud, where he is confined in the stall, &c. Although much inflammation may appear, and the disease discover much inveteracy; the cure is not difficult.

1139. "*After washing the legs and ancles with soap suds,* take one table spoonful of powdered brimstone, one table spoonful of lard, mix well together, and anoint the sores and parts inflamed twice a day. A horse will get well much sooner confined in a stall, than by running at large."

1140. *Another.*—"Boil poke root to a strong decoction, and bathe the ancles twice a day. In all cases a clean stable will aid you much in making a quick cure of the scratches."—*Farmer and Gardener.*

1141. *Mange.*—Wash clean with soap suds, and anoint with sulphur and lard, in equal quantities.

1142. "*Galls and wounds.*—I confidently recommend a solution of saltpetre and blue stone. The saltpetre should be

first dissolved in warm water, in such proportions as to be moderately strong to the taste, and blue stone added, until the solution is slightly tinged. This and nothing else, is to be used as a wash, two or three times a day. It purifies the wound, destroys proud flesh, produces granulations immediately, and heals the worst wounds in a surprisingly short time. I have had horses badly kicked and otherwise hurt, in mid winter, and mid summer; their cure was equally rapid, and afterwards no scar was visible. The wound requires no covering—flies will not approach it, and dressing it with a small mop of rags tied to a stick, is very little trouble. Wounds do not require to be sewed up under this treatment, at least I never saw any advantage from it, as the stiches uniformly have torn out. The skin will approximate as the wound heals."—*Farmer's Cabinet.*

1143. *Horse flies.*—"In order to prevent horses being teased with flies, take two or three small handfulls of walnut leaves, upon which pour two or three quarts of soft cold water, let it infuse one night, and put the whole the next morning into a kettle, and let it boil for a quarter of an hour; when cold, it will be ready for use. Nothing more is required than to moisten a sponge with the liquid, and before the horse goes out of the stable, let those parts which are most irritable be smeared over with the liquor, viz:—between the ears, the neck, the flank, &c. Not only the lady or gentleman who rides out for pleasure, will derive benefit from the walnut leaves thus prepared, but the coachman, the wagoner, and all others who use horses during the hot months."—*Southern Agriculturist.*

ART. CXV.—USEFUL TABLES.

1144. *A table to show at a glance,* the number of hills or plants contained in an acre of land, at any given distance from each other, from 40 feet by 40, to 1 foot by 1, omitting fractions.

Ft.	Ft. In.	P. Acre	Ft.	Ft. In.	P. Acre	Ft.	Ft. In.	P. Acre	Ft.	Ft. In.	P. Acre	Ft.	Ft. In.	P. Acre
40	by 40	27	16	by 15	175	8	0 by 8	660	5	6 by 3	2640	3	9 by 3	2676
39	" 39	26	16	" 10	274	7	7	777	5	6 " 2	3166	3	9 " 2	4224
39	" 37	30	16	" 9	644	7	6	905	5	6 " 1	3960	3	9 " 1	4644
38	" 37	31	15	" 15	193	7	5	1089	5	6 " 0	6229	3	9 " 0	6192
38	" 36	33	15	" 10	290	7	4	1361	5	5 " 6	7920	3	8 " 6	6637
38	" 35	35	15	" 9	330	7	3	1815	5	5 " 5	1742	3	8 " 5	7744
37	" 34	37	14	" 14	222	7	2	2722	5	5 " 4	1936	3	8 " 4	9274
37	" 33	40	14	" 10	311	7	1	5445	5	5 " 3	2178	3	8 " 3	11616
36	" 32	43	14	" 5	622	7	0	888	5	5 " 2	2489	3	8 " 2	8265
36	" 31	45	13	" 13	267	6	11	967	5	5 " 1	2904	3	8 " 1	8929
35	" 30	48	13	" 10	335	6	10	1037	5	5 " 0	3484	3	8 " 0	9288
35	" 29	51	13	" 9	670	6	9	1131	5	4 " 6	4356	3	7 " 6	9288
34	" 28	56	12	" 12	302	6	8	1244	5	4 " 5	5808	3	7 " 5	9288
34	" 27	58	12	" 9	363	6	7	1382	5	4 " 4	8712	3	7 " 4	9288
33	" 26	64	12	" 5	726	6	6	1555	5	4 " 3	2151	3	7 " 3	9288
33	" 25	66	11	" 11	360	6	5	1777	5	4 " 2	2420	3	7 " 2	9288
32	" 24	72	11	" 10	396	6	4	2074	5	4 " 1	2765	3	7 " 1	9288
32	" 23	78	11	" 5	792	6	3	2489	5	4 " 0	3226	3	7 " 0	9288
31	" 22	84	10	" 10	435	6	2	3111	5	3 " 6	3872	3	6 " 6	9288
31	" 21	91	10	" 9	494	6	1	4148	5	3 " 5	4940	3	6 " 5	9288
30	" 20	96	10	" 8	544	6	0	6222	5	3 " 4	6453	3	6 " 4	9288
30	" 19	106	10	" 7	622	5	11	1210	5	3 " 3	9680	3	6 " 3	9288
29	" 18	114	10	" 6	726	5	10	1320	5	3 " 2	2722	3	6 " 2	9288
29	" 17	121	10	" 5	871	5	9	1452	5	3 " 1	2904	3	6 " 1	9288
28	" 16	128	10	" 4	1089	5	8	1613	5	3 " 0	3111	3	6 " 0	9288
28	" 15	136	10	" 3	1452	5	7	1815	5	2 " 6	3360	3	5 " 6	9288
27	" 14	144	10	" 2	2178	5	6	2074	5	2 " 5	3630	3	5 " 5	9288
27	" 13	153	10	" 1	4356	5	5	2420	5	2 " 4	3960	3	5 " 4	9288
26	" 12	162	9	" 9	537	5	4	2904	5	2 " 3	4356	3	5 " 3	9288
26	" 11	173	9	" 8	605	5	3	3630	5	2 " 2	4840	3	5 " 2	9288
25	" 10	184	9	" 7	691	5	2	4840	5	2 " 1	5445	3	5 " 1	9288
25	" 9	196	9	" 6	806	5	1	7260	5	2 " 0	6222	3	5 " 0	9288
24	" 8	210	9	" 5	968	5	0	1417	5	1 " 6	7260	3	4 " 6	9288
24	" 7	225	9	" 4	1210	4	11	1584	5	1 " 5	8712	3	4 " 5	9288
23	" 6	242	9	" 3	1613	4	10	1760	5	1 " 4	1089	3	4 " 4	9288
23	" 5	261	9	" 2	2420	4	9	1980	5	1 " 3	3097	3	4 " 3	9288
22	" 4	282	9	" 1	4840	4	8	2272	5	1 " 2	3318	3	4 " 2	9288
21	" 3	306				4	7		5	1 " 1	3674	3	4 " 1	9288
21	" 2	334				4	6		5	1 " 0		3	4 " 0	9288
20	" 1	365				4	5		5	0 " 6		3	3 " 6	9288
20	" 0	403				4	4		5	0 " 5		3	3 " 5	9288
19	" 11	432				4	3		5	0 " 4		3	3 " 4	9288
19	" 10	484				4	2		5	0 " 3		3	3 " 3	9288
19	" 9	544				4	1		5	0 " 2		3	3 " 2	9288
18	" 8	622				4	0		5	0 " 1		3	3 " 1	9288
18	" 7	726				3	11		5	0 " 0		3	3 " 0	9288
18	" 6	871				3	10		4	11 " 6		3	2 " 6	9288
17	" 5	1089				3	9		4	11 " 5		3	2 " 5	9288
17	" 4	1452				3	8		4	11 " 4		3	2 " 4	9288
17	" 3	2178				3	7		4	11 " 3		3	2 " 3	9288
16	" 2	4356				3	6		4	11 " 2		3	2 " 2	9288
16	" 1	537				3	5		4	11 " 1		3	2 " 1	9288
16	" 0	605				3	4		4	11 " 0		3	2 " 0	9288
15	" 10	691				3	3		4	10 " 6		3	1 " 6	9288
15	" 9	806				3	2		4	10 " 5		3	1 " 5	9288
15	" 8	968				3	1		4	10 " 4		3	1 " 4	9288
14	" 7	1210				3	0		4	10 " 3		3	1 " 3	9288
14	" 6	1613				2	11		4	10 " 2		3	1 " 2	9288
13	" 5	2420				2	10		4	10 " 1		3	1 " 1	9288
13	" 4	4840				2	9		4	10 " 0		3	1 " 0	9288
						2	8		4	9 " 6		3	0 " 6	9288
						2	7		4	9 " 5		3	0 " 5	9288
						2	6		4	9 " 4		3	0 " 4	9288
						2	5		4	9 " 3		3	0 " 3	9288
						2	4		4	9 " 2		3	0 " 2	9288
						2	3		4	9 " 1		3	0 " 1	9288
						2	2		4	9 " 0		3	0 " 0	9288

1145. *Weight of grain.*—Wheat 60 lbs.; rye, 53 lbs.; barley, 47 lbs.; Indian corn, 56 lbs.; peas, 64 lbs.; beans, 63 lbs; oats, 38 lbs.

1146. *To find the contents of a binn of corn, or any grain.* Multiply the length by the width, and then by the depth, divide by 5, substract the quotient from the dividend, and halve it by cobbs, viz:—a binn 10 feet wide, 15 feet long, and 8 feet deep.

Binn 10 feet wide,
Multiply by 15 feet long,

50
10

150
Multiply by 8 feet deep,

Divide by 5) 1200

240 substract the quotient from the dividend,

Divide for cobbs 2) 960

480 nett bushels.

1147. *An acre of land contains*
4 roods, each rood 40 rods, poles, or perches.
160 rods, 30¼ yards each.
4,840 square yards, 9 feet each.
43,560 square feet, 144 inches each.
174,240 squares of 6 inches each.
6,272,640 inches, or squares of one inch each.

1148. *Weights.*
A cubic foot of loose earth or sand, weighs 95 pounds.

"	"	common soil,	"	124	"
"	"	strong soil,	"	127	"
"	"	clay,	"	135	"
"	"	mason's work,	"	205	"
"	"	cast iron,	"	450 45	"
"	"	steel,	"	489 8	"
"	"	lead,	"	709 5	"
"	"	platina,	"	1218 75	"
"	"	copper,	"	486 75	"
"	"	cork,	"	15	"
"	"	tallow,	"	59	"
"	"	oak,	"	73 15	"
"	"	brick,	"	125	"

MEASURES OF LENGTH.

1149. *A line* is the twelfth of an inch, and one hundred and forty fourth of a foot.

A geometrical pace is 44 feet English; and an *English mile* contains 1,200 paces, or 1,760 yards, 5,280 feet.

A Scotch mile contains 1,500 paces; a *German* mile 4,000; a *Swedish* and *Danish* mile 5,000; the *Russian* mile 750.

A hand, used in measuring the height of horses, is 4 inches.

A Surveyor's chain is 4 poles, or 66 feet, divided into 100 links of 792 inches. *A square chain* is 16 poles, and 10 square chains are an acre; 640 square acres are a square mile; and 4,840 square yards are an acre, 6,958 yards each way.

The Irish acre is 7,840 square yards.

The Scotch acre is 127 English.

A French arpent is five eighths of an English acre.

121 Irish acres are equal to 196 English.

48 Scotch acres are equal to 61 English.

11 Irish miles are equal to 14 English.

80 Scotch miles are equal to 91 English.

TASKS FOR ABLE BODIED LABOURERS.

1150. At the different employments of the farm and plantation.

(NOTE.—The following tasks may under some circumstances be too large, and should be varied according to the state of the land, &c., particularly in ditching, hoeing, and listing; for in many places it would be easier to ditch 800 feet, than it would 500 feet where there are stumps, springs, sands, &c.)

Ditching.—600 square feet.

Putting mud upon the bank.—600 square feet.

In making new drains.—15 inches wide, and two and a half feet deep, 210 feet in length.

Cleaning old drains.—6 to 10 tasks, or quarters, according to the mud.

Cleaning old ditches.—1 to 2 tasks, or quarters, according to the mud.

Turning up land with a hoe.—1 quarter of an acre; but if stiff clay, it will require a third more labour.

Chopping.—One half an acre.

Listing ground.—One half an acre is the quantity allotted to each hand, but in old pastures, having a tough sod, one quarter of an acre is as much as they can get through with; and even then with difficulty.

Bedding up.—In light soil 1 quarter and a half, to 2 quarters, or one half an acre.

Trenching.—For small grain on high land, 3 quarters of an acre, 80 or 90 rows in each quarter. *On rice plantations*, the Surveyor's measure is seldom made use of. One half acre is 150 feet each way; a quarter is 75 feet each way, which is trenched 15 inches from centre to centre; this gives 60 rows in the quarter.

Covering.—3 quarters of an acre, 80 or 90 rows in each quarter.

Sowing.—2 and a half to 3 acres. If the wind is high perhaps not more than 1 or 1 and a half acres, this depends on the number of trenches in an acre. (See trenching.)

Hoeing cotton, corn and potatoes.—1 half to 1 acre.

Hoeing rice.—1 half an acre upon tide lands; but inlands sometimes not a quarter.

Threshing.—500 sheaves for a woman; 600 for a man.

In *laying out fields* into quarters or tasks, a man and boy will do 40 acres.

Getting task stakes.—500 to a hand.

Getting staves.—4 men to 800 staves.

Drawing staves.—500 each hand.

Getting barrel heading.—4 men to 300.

Hoop poles.—100 and brought home, if the distance is short, or 120 if left in the woods.

Getting puncheons.—500 broad puncheons, 4 and 5 feet in length, for 3 hands.

Squaring timber.—100 feet per day each carpenter.

Sawing pine.—100 feet; cypress, 120 feet.

Making worm fences.—Rails on the spot, and every thing ready and placed clear—a man and woman can put up 100 pannels.

Spliting rails.—100 rails, 12 feet long and heavy.

Post and rail fence.—4 negroes can put up 30 or 40 pannels per day, dig the holes 2 and a half to 3 feet deep, put down the posts, and rammed properly at 9 feet apart from each other.

Morticing posts.—A carpenter can make 60 mortices per day.

Spliting garden pailings.—500 to 3 men.

Cutting wood.—1 cord, 8 by 4, by 4 feet.

Making rice barrels.—3 barrels a day; half barrels, 4 a day.

Shingling.—A square of 10 feet.

Mowing hay.—For an experienced labourer, half an acre per diem.

Cradling oats, or small grain.—An expert hand after a little practice, can with ease cradle 3 acres a day, but it is not uncommon for experienced hands to cradle 4 and a half to 5 acres.

ART. CXVI.—USEFUL RECEIPTS.

SOAP FROM MYRTLE WAX.

1151. "To three bushels and a half of common wood ashes, was added half a bushel of unslacked lime. These being well mixed together, were put into a cask capable of containing sixty gallons, and was filled up with water. In forty-eight hours the lye was strong enough to float an egg. It was then drawn off, and from six to eight gallons of it put into a copper kettle, capable of containing about twenty-five gallons. To this was added only *four pounds* of myrtle wax. This was kept boiling over a constant steady fire, from nine o'clock in the morning till three in the afternoon. For the first three or four hours, a supply of strong lye was poured in occasionally, and the whole frequently well stirred with a ladle. After six hours boiling, two quarts of common large grain salt were thrown into the kettle, which was left one hour more to simmer over a slow fire. The liquor was then put into tubs to cool, where it continued twenty-four hours; and then the soap was taken out, wiped clean, and put to dry. The next day it was weighed, when the produce was found to be forty-nine pounds of good solid soap, from the materials, and by the process above mentioned. At the end of six weeks the soap had lost only a few pounds, from the evaporation of its watery particles.

"In many parts of our State the myrtle tree is abundant, and from three pecks to a bushel may be gathered from a hand per day."—*From the Southern Agriculturist of* 1839, *oevr the signature of* ECONOMY, *St. Paul's Parish.*

1152. *To cure meat.*—Boil together, over a gentle fire, six pounds of common salt, two pounds of powdered loaf sugar, three ounces of saltpetre, and three gallons of spring water.

Skim it while boiling, and when quite cold, pour it over the meat, every part of which must be covered with the brine.

Small pork will be sufficiently cured in four or five days; hams intended for drying, in two weeks, unless they are very large. The pickle may be used again and again, if it be fresh boiled up with a small addition of the ingredients. Before putting the meat into the brine, soak it in water, press out the blood, and wipe it dry and clear.

BURDEN'S RECEIPT FOR CURING BEEF.

1153. To every thirty pounds of beef, rub in one ounce of saltpetre powdered fine, then have it rubbed well with salt; (which should be rather fine,) let it remain in an empty barrel for a day or two, then have it rubbed again with salt; first draining off any juice which may have exuded—make a pickle of salt and water strong enough to bear a fresh egg, and to a half barrel of it, put an ounce of saltpetre, and half a pint of molasses—put in the beef, and in a week or ten days, boil the pickle, and skim off the froth which will rise to the top in the process, when the froth ceases to rise, let the pickle cool, and when *perfectly cool*, put it over the beef again, and so let it remain, and use the beef as you may require it. If the weather should be very warm, or the beef be kept long in the pickle, it may require boiling again, which you can ascertain by its changing to a bloody colour.

N. B. The flat rib, round, and navle, or flank pieces, are the best for pickling, and the beef should always be very fat.—The beef may be used in ten days after first putting it in pickle.

HUGER'S RECEIPT FOR CURING BEEF OR TONGUES.

1154. To one hundred pounds of beef, take of fine salt, five quarts, of brown sugar, four pounds, and of saltpetre, four ounces. The beef, or tongues, being washed clean, and drained off, (by being left on a table elevated at one end for half an hour,) rub in the above ingredients, well mixed together, until the whole are consumed—this will be the case in twenty minutes—then pack away in the harness casks, and sprinkle a handful of salt on the top. In two or three weeks you will have excellent beef, that will be sweet and tender until May or June.

A SUPERIOR AND LASTING WHITE WASH.

1155. Take one quarter of a peck of unslacked lime, pour

on it a kettle of boiling water, while slacking, add one half a gallon of chamber lye, when perfectly slacked, dilute it with water to the proper consistence, and add one quarter of an ounce of Prussian blue, this will give a beautiful and lasting white wash, that will neither peal off, or turn yellow. Increase the quantity of blue, and you will have a dark or pale blue, as suits your taste. Add yellow or red ochre, and have these tints if you desire it.

DOMESTIC YEAST.

1156. Boil one pound of good wheat flour, one quarter of a pound of brown sugar, and a little salt, in two gallons of water, for one hour. When milk warm, bottle it, and cork close, it will be fit for use in twenty-four hours. One pint of this yeast will make eighteen pounds of bread.

FROM A GERMAN PAPER.

TINCTURE OF ROSES.

1157. Take the leaves of the common rose, place them without pressing them, in a bottle, pour good spirits of wine upon them, close the bottle, and let it stand until it is required for use. This tincture will keep for years, and yield a perfume little inferior to otto of roses; a few drops of it will suffice to impregnate the atmosphere of a room with a delicious odor. Common vinegar is greatly improved by a very small quantity being added to it.

TO MAKE DELIGHTFUL BITTERS.

1158. Take one ounce of bark, one ounce of sweet orange peel, half an ounce of chamomile flowers, half an ounce of calamus, and one pinch of angelica root. Put all into two quarts of old brandy, shake the bottle twice a day, and it will be fit for use in four days. You may add a few raisins and cloves.

TO MAKE YEAST THAT WILL KEEP A YEAR.

1159. In Long Island they make *yeast cakes*. A parcel of these cakes is made *once a year*. That is often enough.—And when you bake, you take one of these cakes, (or more according to the buln of the hatch,) and with them raise your bread. The very best bread is lightened with these cakes.

The materials for a good batch of these cakes are as fol-

lows:—Three ounces of good fresh hops; three and a half pounds of rye flour; seven pounds of Indian corn meal; and one gallon of water. Rub the hops so as to separate them. Put them into the water, which is to be boiling at the time.—Let them boil half an hour. Then strain the liquor through a sieve into an earthen vessel. While the liquor is hot, put in the rye flour; stirring the liquor well and quickly, as the rye flour goes into it. The day after, when it is working, put in the Indian corn meal, stirring it well as it goes in. Before it is all in, the mess will be very stiff; and it will in fact be *dough*, very much of the consistence of the dough that bread is made of. Take this dough, knead it well, as you would for *pie crust*. Roll it out with a rolling pin, as you roll out pie crust, to the thickness of about a third of an inch. When you have it (or a part of it at a time,) rolled out, cut it up into cakes with a tumbler glass turned upside down. Take a clean board, (a *tin* may be better,) and put the cakes *to dry in the sun*. Turn them every day; let them receive *no wet;* and they will become as hard as ship biscuit. Put them into a bag or box, and keep them in a place perfectly free from damp. When you bake, take two cakes, put them into hot water *over night*, having cracked them first. Let the vessel containing those stand near the fire place all night. They will dissolve by the morning, and then you use them in setting your *sponge*, (as it is called,) precisely as you would use the yeast of beer."—*Cobbett.*

TO PRESERVE RHUBARB.

1160. When its leaves are pretty large, you cut them off close to the stem, and if the plant be fine, the *stalk of the leaf* will be from eight inches to one foot long. After being stripped of the skin, or outer covering, and divested of its small fibres, or stringiness, which it is liable to, in an advanced stage of its growth, it should be cut into bits of a half inch or less in length, and then par-boiled with sugar, and such spices as may best suit the palate. It will keep this way the same as other preserves, and may be used not only in pies and tarts, but it makes excellent pudding by flattening a suety crust with a rolling pin, then spreading on the fruit, rolling it up in an oval shape, and boiling it in a cloth. The fruit this way will retain its virtues, and the pudding may be served up hot, in slices of from half an inch to an inch thick, and spreading butter and sugar between the layers.

ARROW ROOT PUDDING.

1161. Take six eggs, one and a half pints of milk, a heaping table spoonful of arrow root, the arrow root and milk to be well mixed together previous to putting in the eggs, the latter to be well beat; then boil forty-five or fifty minutes.

TOMATO OMELET.

1162. Peel a quart of ripe tomatoes; chop and put them down to simmer for about twenty minutes, with as much water as will cover them; chop a few onions very fine, and throw them in with crumbled bread, and a lump of fresh butter, and when nearly done, beat up four eggs, and stir them in for a few minutes, and serve the omelet up.

TO COOK THE JERUSALEM ARTICHOKE.

1163. "Wash and scrape or pare them; boil in milk and water till they are soft, which will be from a quarter to half an hour. Take them out and stew them a few minutes in the following sauce. Roll a bit of butter the size of a walnut in flour, mix it with half a pint of cream or milk, season it with pepper, salt, and grated nutmeg, and you have a delightful fricassee. They may be boiled plain, and served up with a little melted butter poured over them."

TO COOK SWISS CHARD.

1164. Trim the leaf from the stem with a knife, and boil the stem in water with a little salt till tender, then take them out and drain all the water off, put them in a stew pan, pour on some drawn butter, (*sauce blanche*, as the French call it,) cover them close, and stew them for fifteen minutes. It is then equal to asparagus. The leaf part is cooked in the same way, and some cook the leaf and stem together, but they are much better cooked separately. Cooked thus, the leaf is fully equal to spinach."

TO DRESS RABBIT OR MOLE SKINS.

1165. "Take a teaspoonful of alum, and two of saltpetre, both finely powdered; mix them well; sprinkle the powder on the flesh side of the skins, then lay the salted sides of two skins together, leaving the fur outward; roll the skins exceedingly tight, and tie it round with a thread; hang the roll in a dry place for some days, then open it, and if sufficiently dry, scrape them clean with a blunt knife, and keep them in a dry situation. This finishes the process."

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